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SOUTHWESTERN JOURNAL OF ANTHROPOLOGY

Published by the University of New Mexico and the Laboratory of Anthropology, Santa Fé in the interest of general anthropology

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UNIVERSITY OF NEW MEXICO PRESS
ALBUQUERQUE

THE SOUTHWESTERN JOURNAL OF ANTHROPOLOGY is designed to include articles in all branches of anthropology—ethnology, archaeology, folklore, linguistics, physical anthropology, and anthropogeography—relating to peoples and cultures, past and present, in any region. It is offered as a vehicle of expression for anthropologists in all parts of the world.

Manuscripts and other editorial materials should be addressed to the Editor, LESLIE SPIER, University of New Mexico, Albuquerque, New Mexico.

Subscriptions, at $4.00 a calendar year (single number, $1.00), should be sent to the UNIVERSITY OF NEW MEXICO PRESS, Albuquerque, New Mexico.

Issued in quarterly numbers: Spring, Summer, Autumn, Winter of each year.

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ARCHAEOLOGY AND ANTHROPOLOGY

V. GORDON CHILDE

MY THESIS is that archaeology and anthropology (or, if you will, ethnography) are two complementary departments of the science of man related in the same way, and as mutually indispensible, as palaeontology and zoology in the science of life. Both are classificatory sciences, and *qua* sciences both deal with abstractions. The justification for the abstraction, of course, is that it helps us to see general rules and that these rules work. Any classification—"This is a hen"—involves abstraction. But it is at the same time a generalization that leads to practical results; we can go on from our "hen" to deduce "therefore it will lay eggs." This rule will generally work, but not with the same degree of probability as the laws of physics; sometimes your hen does not lay. Both archaeology and anthropology should, I suggest, be engaged in classifying—societies or their cultures. Societies, of course, are themselves abstractions; they are associations of men and women, and no man's personality is exhausted by saying that he is an Arunta or a Kwakiutl. But the anthropologist is concerned with the individual only as an Arunta or Kwakiutl. As such he can say that he will marry within such and such a group, will use certain kinds of weapons and will be buried so and so. Oher aspects of his behavior and exceptional deviations from the normal pattern must be ignored like the hen that won't lay. So you get a generalized picture of Kwakiutl or Arunta society and culture.

Archaeology proceeds in just the same way. It deals with types and assemblages of types called "cultures" and ignores the differences between their individual representatives. It ignores also such specimens as, being unique, do not belong to any defined or definable "culture." Finding a Gravettian knife-blade in France, I am not concerned, *qua* archaeologist, with its material, whether flint or jasper, or the grace or crudity of its form. But having identified it, I do know

it belonged to a mammoth-hunter, members of whose society could draw and paint in a particular naturalistic style and do other things that need not be enumerated now.

It may be that anthropology and archaeology should stop at this point, that the only generalization they should aim at is an abstract description of Kwakiutl culture or Gravettian culture. Actually both have tried to go on and classify the societies or cultures thus abstractly defined. And herein they have imitated the nearest of the established natural sciences—biology. Zoologists did not long remain content with the Linnæan type of classification into phyla, classes, orders, genera, and species. Lamarck and his followers began to range these divisions themselves in an hierarchic order. And palaeontology, combined with stratigraphical geology, encouraged the hope that the hierarchic order was also a chronological sequence in the sense that species, ranked *higher* in the hierarchy, should first appear in undisturbed strata *higher* up, and therefore later, than those of lower rank. Eventually, of course, Darwinism converted what had been an hierarchic and chronological succession into a historical process.[1]

The excavation of barrows and the collection of prehistoric tools had revealed the material culture of human societies radically different from those familiar to their discoverers or described in histories of Classical Antiquity and the Middle Ages. The systematic comparison and classification of these relics led to a revival of the notions, familiar from Hesiod and Lucretius, of stages in the development of human industries—the celebrated division into Stone, Bronze, and Iron Ages. First systematically applied by Thomsen in Denmark in 1812, it was established as a stratigraphical sequence by Nilsson (1838-1843) and Worsaæ (1861), and given further refinements in the typological systems of de Mortillet (1862 ff) and Montelius (1873 ff). Prehistoric cultures were classified in evolutionary series, profoundly influenced by contemporary zoological and geological classifications.[2]

A similar attempt at classifying contemporary illiterate cultures was a little longer delayed. The Great Navigations had indeed introduced Europeans to societies whose institutions and organization were qualitatively different from their own and from those of Classical Antiquity. But anything like a systematic

1 Cf. Hugh Miller, *History and Science* (Berkeley and Los Angeles, 1931).

2 Even in 1849 John Evans wrote *(Ancient British Coins)*, "I attempted to apply the principles of 'evolution' and 'natural selection' to numismatic enquiries." Compare also Worsaæ: "Les érudites classiques de l'école ancienne se moquèrent longtemps de cette archéologie que ne s'occupe que des temps barbares. Mais les naturlistes vinrent aux secours des archéologues nationaux . . ." (Presidential address to 4th Congrès international d'anthropologie et d'archéologie préhistoriques, 1869).

comparative study was in fact postponed till the middle of the 19th century[3] by which time other interesting specimens had been discovered in the Pacific Islands and Australia. The classifications put forward at such a time were naturally hierarchical like the Lamarckian. Indeed Maine, Spencer, Morgan, and Tylor present their hierarchical series as also sequences in time, and so evolutionary in the Darwinian sense. In so far as they considered mechanisms at all, mid-nineteenth century archaeologists and ethnographers alike tended, like contemporary zoologists, to stress the unity of mankind and the diversity of the inanimate environment. Later commentators have exaggerated this emphasis and so produced an illusionary antithesis between "evolutionism" and "diffusionism."

Diffusionists, led in Britain by the late Sir Grafton Elliot Smith, have accused the writers named of asserting that all societies must independently pass through various stages in the parallel evolutions of their equipment, their social, political, and religious institutions. In reality this accusation is based on a complete misconception of the writers' aims. White[4] has demonstrated in detail that Tylor is studying the evolution of religion, not the history of any given religion, and Morgan the evolution of forms of family, not the history of the Iroquois or Roman family. He quotes many passages from both to show that these classical "evolutionists" fully recognize the importance of diffusion in bringing about the progress from one stage to the next. The same is true of the archaeologists. De Mortillet's classification does not purport to set forth the history of technology in France or anywhere else, but the development of technology in the abstract. When he turns to the archaeological history of France, he is not an evolutionist at all; the Neolithic does not "evolve" from the Palaeolithic in the Dordogne, but *au commencement de l'époque actuelle on voit tout à coup une civilisation nouvelle s'introduire sans transition.*"[5]

The extreme diffusionists have combatted this bogey of a one-sided evolution by an equally one-sided postulate of diffusion. In effect Elliot Smith, Hocart, Perry, and Raglan argue that all the major discoveries, institutions, or beliefs were made, created, or imagined only once by some one chosen people in a single historical center. Each and all were then diffused among surrounding barbarians and degraded in the process. Raglan asserts "No savage ever

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3 The Ethnological Society of London was formed in 1843 (it became the Anthropological Institute in 1871). Anthropological societies were formed in Paris in 1859, in Berlin in 1869, and in Vienna in 1871.

4 Leslie A. White, *"Diffusionism vs. Evolution": An Anti-Evolutionist Fallacy* (American Anthropologist, vol. 47, pp. 339-356, 1945).

5 *Matériaux pour l'histoire primitive et naturelle de l'homme* (Paris, 1879), p. 227.

invented anything"[6] and "No people can civilize itself."[7] In this extreme form, as an antidote to evolutionism, diffusionism is a reversion in anthropology to something like catastrophism in geology; it is liable to be mystical and anti-empirical. The "degradation of culture," so vigorously, and justly, asserted by Elliot Smith, looks very like our old friend "the Fall of Man." If "no people can civilize itself," we should still be savages if some *deus ex machina* had not by a miracle raised one society of savages to civilization. Elliot Smith indeed tried to make the geography of the Nile valley perform the miracle, but as a result of subsequent archaeological discoveries his successors are no longer able to accept the Ancient Egyptians as the "chosen people," yet have proffered no more plausible miracle-worker.

But the controversy that raged twenty years ago round the "Children of the Sun" was exacerbated by the loose arguments of the sort often used by many diffusionists and still more by the "shreds and patches" conception of culture implicit in their argumentation. Diffusionists—and others too—went about picking bits out of various cultures, divorcing them from their context and function, and comparing these lifeless isolates. As Radcliffe Brown put it,[8]

> The concentration of attention on what is called the diffusion of culture traits tends to produce a conception of culture as a collection of disparate entities (the so-called traits) brought together by pure historical accident and having only accidental relations to one another.

Often indeed the "traits" seem to be just verbal labels while the rank of a culture would be determined by the number of labels that can be attached to it. Thus labelled, agriculture can be treated as a common trait without regard to the very diverse techniques, actually employed in the cultivation of even barleys and wheats to say nothing of rice, maize, yams, or taro. The loss of a trait, say pottery,[9] is equivalent to the degradation of the culture concerned, but historically this is not necessarily true. In the Trobriands and adjacent archipelagos the loss of pottery was in fact one result of a change from an economy of self-sufficiency to one of intercommunal specialization; the Amphlett Islanders, favorably situated, began to supply with pots those less well endowed in exchange for their appropriate products. That is no more a regression than when the

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6 *Jocasta's Crime* (London, 1933).

7 *Anthropology and the Future of Civilization* (The Rationalist Annual, London, 1946), p. 40.

8 *On the Concept of Function in Social Science* (American Anthropologist, vol. 37, pp. 394-402, 1935), p. 401.

9 E. g., W. J. Perry, *The Children of the Sun* (London, 1923), p. 32.

people of Bradford or Paisley gave up growing their own grain and wool to process wool grown in Australia and eat American wheat.

Functionalism, as expounded by Malinowski and Radcliffe Brown, is surely not a little affected by the reaction against this windy controversy.[10] In effect the functionalists say "A plague on both your houses; scientific anthropology has nothing to do with the origins of institutions and customs. Its business is to study and describe these institutions as they are and see how they function in the living organism before your eyes. And *this* will have practical results; it will for instance warn the Colonial Office or missionaries of some probable consequences of suppressing, say head-hunting or pre-marital sexual intercourse."

Now, as a method, that is beyond reproach; it is indeed the prerequisite of any further classification. But must the science of man stop there? Is the task of anthropology exhausted in giving a series of distinct pictures of individual cultures and advising Colonial Officers what to do in specific cases? If so, is it merely a descriptive technique rather than a classificatory science? I suggest in the first place that no one after two or three years residence and observation can decide how an institution functions in a society and evaluate its role. To do that you have to compare the institution and the society as they are today with what it was in the past. In appreciating the kula trade of Melanesia it is relevant to know that most islands once made their own pottery. The monopoly of the industry by the Amphlett Islanders is a result of this highly developed commerce. This observation not only enhances our appreciation of the function of kula, it also deepens our understanding of the cultures of the several participants as they are today. But to reach this result the functionalist has had to appeal to history or rather archaeology.

But further, what the colonial administrator wants to know is not only what part a given institution plays in the life of a society today, but also, and rather, what effect a change in that institution is likely to have on other institutions, on the society as a whole. But change of this sort is an historical process. In the day-to-day metabolism of an organism you have no such historical change of kind but merely static replacement, as in the cyclical movement of the clock hand round the dial. What you want to observe is the emergence of new organs or the suppression of old functions. But that happens only in history—in the four dimensional space-time frame of reference.

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10 For instance Piddington (*Essays in Polynesian Ethnology*, 1939, p. xi) writes, "The present divergence of opinion between functionalists and historians is a logical development from the earlier conflict between parallelism or evolutionism on the one hand and diffusionism on the other."

What scientific and practically serviceable anthropology ought to aim at is by observation and induction to establish rules showing how several variables change together and affect one another in changing[11]—to be able to present, for instance, the kinship organization as a function of the technology or religion as a function of the family and so on. Now such correlations were precisely the objective of the comparative ethnographers of the mid-nineteenth century. Their procedure was fundamentally like that of comparative anatomy and revealed an hierarchic order like the Lamarckian classification of animals. But an hierarchic order need not be an historical order; it may, like pre-Darwinian zoology, be compatible with a series of miraculously created and eternal species. Just as palaeontology was necessary before the Linnæan classification could be converted into an historical sequence, so archaeology is indispensable if we are to convert a sociological hierarchy into an historical classification and avoid arbitrary *a priori* criteria in ranking cultures in that hierarchy.

Certain diffusionists seem to hold that the rank of a society or a culture can be mechanically determined by the number of traits it exhibits, the constellation of labels that apply to it. The loss of a trait meant for them regress, and the addition of a label would presumably have indicated progress. We have rejected that contention in a specific instance—the loss of pottery in certain Melanesian islands. But that rejection presupposed and implied that we knew already the general direction of progress, in fact a law that described social change, but did not of course govern it. How was such a law obtained? In this concrete case from history; for written records suffice to demonstrate from a mass of instances that economic evolution has in fact proceeded from a "subsistance" towards a "commercial" stage.[12]

I suggest that one preëminent task for anthropology is just to establish such directional laws or general tendencies so that we can determine in what direction culture progresses and thus decide whether a given change be progressive or regressive. The hierarchical classifications of the comparative ethnographers certainly were intended to exhibit just this progressive evolution. But progress is a historical concept involving change in time. A hierarchical classification is only progressive if its order is also chronological, i. e. if its several stages do actually succeed one another in time in the same order. For the only objective criterion of progress is what happened in history.

Now only a few societies in an advanced stage of their progressive develop-

11 Cf. E. D. Chapple and C. S. Coon, *Principles of Anthropology* (New York, 1942), p. 6.

12 Using the terms in the sense of Chapple and Coon, *op. cit.*, p. 263.

ment have begun to keep written records. The progress of the simpler societies that ethnography has especially studied, and of all societies in their earlier and simpler stages, can only be reflected by, and traced through, archaeology. But the archaeological record is regrettably uneven; it discloses only a few aspects of culture and these with varying degrees of clarity. Means of production, comprising not only tools but the food-quest, housing, and transport, is fairly well represented in the archaeological as in the ethnographic record; relations of production—division of labor, extent of trade, concentration of the social surplus—can also be inferred, albeit less certainly. Art and religion have left plentiful but rather capricious traces; social organization very few; custom and law, language and myth, none at all.

On the basis of material remains archaeologists have built up a classification of cultures in technological stages that do follow one another in the same order in quite a number of regions; they are everywhere homotaxial but not necessarily contemporary.[13] Most of these stages can be matched fairly well in the ethnographic record, but, admittedly, not often exactly. If then in comparative ethnography we classify our societies on the basis of the same aspects of culture and arrange them in the order established by archaeology, our hierarchical series will be also a chronological sequence revealing the direction of progress.

Of course for this purpose the technological stages must not be defined by isolated traits like the material and techniques used in making cutting tools nor by any mechanical aggregates of such traits. Thomsen did in fact adopt that criterion for arranging specimens in a museum, and it was once a legitimate reproach that archaeologists were engaged simply in classifying relics, dead fossils divorced from any social meaning. Nowadays archaeologists merely use the scaffolding provided by Thomsen's classification as a frame for describing cultures and their succession and finding out how their relics functioned in a working economy. In fact the archaeologist, before formulating his stages does apply functionalist methods to analyzing his materials. The ethnographer must do the same before classifying his cultures in a hierarchic or evolutionary series; it is only after functionalist description and analysis that they are ready for comparison and classification. In comparing the ethnographic and archaeological record the same precaution must be observed. If you want to ascertain the relative position of a culture in the evolutionary series with the aid of the archaeologists' sequence, it is not enough to isolate a couple of tools from the one and see where they go in the other.

13 Cf. V. G. Childe, *Archaeological Ages as Technological Stages* (Journal, Royal Anthropological Institute, vol. 74, pp. 1-19, 1944).

The Austrian diffusionists have fallen into precisely this error. Oswald Menghin[14] argues like this; the Neolithic Swiss lived in pile-dwellings, kept pigs, hafted stone celts by means of sleeves, and used the bow; so do the Melanesians. Therefore we are entitled to attribute to the Neolithic Swiss a matrilinear kinship system, secret societies, the couvade, slavery, skull cults, and other elements of the Melanesians' social organization and superstitions. But that is just the "shreds and patches" theory of culture that we have already rejected. The functionalists would be justified in saying that we should only compare cultures as organic wholes, as working and integrated complexes.

Archaeology confessedly cannot entirely grasp such wholes. But the technological and economic phenomena that it does observe in its cultures and does classify in stages, are working and integrated complexes. Now White[15] has just insisted that "the motive force of culture is technological." Marx went little further. He asserted that the mode of production in the long run determines the ideological superstructure. Here "mode of production" means the means of production together with the property relations that permit of their full utilization, and "ideological superstructure" includes social, religious, legal, and aesthetic institutions, beliefs, and conventions. Now the means of production are adequately represented in the archaeological record by food-refuse, hunters' kits, fields, granaries, hoes, mills, artizans' tools, machines, carts, sledges, boats, and so on. The relations of production—how these means are owned, used, and their products distributed—can be inferred to a considerable extent, provided some complete settlement, like Skara Brae in Orkney, be explored fully. Then, having defined the equipment and economy of a prehistoric society, we can treat it as systadial with a contemporary society, similarly equipped and organized. If we accepted Marx' thesis, we might expect a considerable, but certainly not exact, correspondence between the superstitions and institutions of the two groups. Though these have left but fragmentary traces in the archaeological record, the fragments do suggest a certain agreement.

So systadial cultures (i. e., cultures occupying the same relative position in the sequence as defined by the common criterion of technology) are comparable. The ethnographers' picture of a contemporary savage or barbarian society can with due reserve be used to supplement the archaeologists' picture— and that not merely in suggesting how some odd looking relic may have been used. On the

14 *Weltgeschichte der Steinzeit* (Vienna, 1931), p. 510; cf. F. Graebner, *Die melanesische Bogenkultur und ihre Verwandte* (Anthropos, vol. 4, pp. 726-781, 998-1033, 1909).

15 Leslie A. White, *Kroeber's "Configurations of Culture Growth"* (American Anthropologist, vol. 48, pp. 78-93, 1946), p. 88.

other hand the conclusions of archaeology[16] give a valid clue to the rank of a contemporary culture and its position in an evolutionary sequence. In fact the two records combine into a sort of generalized history of culture and provide a universal and objective sequence of culture stages. The sevenfold division adumbrated by Lewis H. Morgan and refined by Friedrich Engels,[17] with his more comprehensive knowledge of European archaeology, is still unsurpassed. Yet naturally the revelations both of subsequent archaeological excavations, conducted on a wider scale and with ever more delicate technique, and of ethnographic studies that have benefitted from the methodological advances of functionalism and other schools, entail a sweeping revision of that brilliant adumbration.

I have attempted here to suggest how that can be effected by an alliance between archaeology and ethnography that shall reconcile functionalism, diffusionism, and evolutionism. Since ninety-nine percent of human history is prehistory, and only illiterate societies exist or have existed in sufficient numbers and with sufficient independence[18] to provide the basis for reliable induction, this method offers the brightest prospect for reaching general laws indicative of the direction of historic progress. For I still regard as a legitimate ideal a history or science of culture[19] that shall "be able, to a degree at least, to forecast the future and to guide our steps towards it."

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16 I do not mean that any recent refinements of Thomsen's old classification into the three ages yet achieve a satisfactory sequence of culture stages. For instance in my recent attempt at subdividing the Bronze Stage into three modes by the use of metal (1) for weapons and ornaments only, (2) also for craft tools, and (3) even in agriculture and rough work, I could not prove that the second was always preceded by the first and always preceded the third. Probably several parallel series will have to be admitted and their correlation will raise delicate problems.

17 *Der Ursprung der Familie, des Privateigentums und des Staates im Anschluss an Lewis H. Morgans Forschungen* (1884).

18 Arnold Toynbee's masterly and erudite attempt *A Study of History* seems to me to fail because he has too few instances and too many of his "civilizations" are not independent entities at all but just stages in Civilization.

19 Although such hybrids seem to accord with the general tendency of linguistic progress, the prejudices engendered by *Literae Humaniores* are too strong to allow me to adopt White's term "culturology." In our use of the terms "history" and "evolution," I believe the divergence is verbal rather than material.

CULTURE-ENVIRONMENT INTEGRATION: EXTERNAL REFERENCES IN YOKUTS LIFE

A. H. GAYTON

I

ONE OF THE ASPECTS of culture dynamics which has received particular attention in recent years is that of integration. Pattern, complex, configuration, integrating factor, and theme have been used as labels for those culture elements which seem to cling together about some core of thought or action. When such constellations interpenetrate various aspects of a total culture they are regarded as integrators—cohesive forces binding parts, if not wholes, of a culture together. The function of the "theme" as a dynamic factor has recently been set forth by Dr M. E. Opler with some pertinent examples of active patterns in Chiricahua Apache life.[1] I interpret his construct of "theme" to be essentially the more familiar "culture pattern," in the ideational realm, with the factor of emotional surcharge taken into account as the active ingredient. Unlike some anthropological concepts, his has the virtue of being grounded in specific ethnographic realities.

An earlier paper by Dr Du Bois demonstrated both cohesive and disruptive action in Tututni culture deriving from the wealth concept, and still earlier, the three-way forces of mythology, chieftanship, and shamanism maintaining social balance in Yokuts life were described by the present writer.[2] The most intellectualized account of cultural integration is that for the Hopi by Dr. Thompson in which no mechanism of integration is shown save an all-pervading logic of the mind.[3]

In the abstract we have to assume that some of these basic cultural currents work for or against each other; others, and perhaps the bulk of culture elements, may be neutral. When Opler completes his thematic analysis of Apache culture, presumably the counter-balance of the driving parts within the structure will be

1 Morris Edward Opler, *Themes as Dynamic Forces in Culture* (American Journal of Sociology, vol. 51, pp. 198-206, 1945).

2 Cora Du Bois, *The Wealth Concept as an Integrative Factor in Tolowa-Tututni Culture* (in *Essays in Honor of Alfred Louis Kroeber*, pp. 149-165, Berkeley, 1936); A. H. Gayton, *Yokuts-Mono Chiefs and Shamans* (University of California Publications in American Archaeology and Ethnology, vol. 24, pp. 361-420, 1930).

3 Laura Thompson, *Logico-Aesthetic Integration in Hopi Culture* (American Anthropologist, vol. 47, pp. 540-553, 1945).

revealed.[3a] Meanwhile, the integrations described in the papers mentioned above deal exclusively with immaterial culture—political organization, economics, social or religious or aesthetic values—without relation to externals, especially so broad an external as environment. Environment, when considered as relevant to culture, is usually limited to its place in the subsistence or material aspects—the phase of native life known as exploitation of environment which has been described with increasing frequence in recent years in ethno-biological studies. Thus, the thematic factors of social life on the one hand and the environmental factors of material culture on the other have been left as disparate parts which move in the total culture without any direct conjunctive action.[4]

In at least one culture, that of the Yokuts and Western Mono of the San Joaquin valley foothills, there is an intimate relation between important immaterial phases of the culture and the environmental setting. This will be described, and in so doing the function of the environment as a culture stabilizer, possibly even as an active integrator, will become evident.

There is nothing essentially new in this viewpoint. The relation of culture to environment in the determination of culture areas was given a broad treatment by Dr Wissler, whose conclusions have been succinctly reëxpressed by Dr Kroeber in his own more recent extensive survey of culture areas, ecology, and culture climaxes in North America. Thus:

> We can accept Wissler's findings on the relation of culture areas to environment. He concludes that environment does not produce a culture, but stabilizes it. Because at many points the culture must be adapted to the environment, the latter tends to hold it fast. Cultures therefore incline to change slowly once they have fitted themselves to a setting, and to enter new environment with more difficulty than to spread over the whole of the natural area in which their form was worked out. If they do enter a new type of territory, they are subject to changes. Once fitted to an environment, they are likely to alter radically only through some factor profoundly affecting subsistence, such as the introduction of agriculture.[5]

Wissler made an early attempt to fix the psychological factor in the relation-

3a Since this paper went to press Dr Opler has published a thematic analysis of Lipan culture, *An Application of the Theory of Themes* (Journal, Washington Academy of Sciences, vol. 36, pp. 137-166, 1946).

4 That something similar to themes exist in material culture is evident when techniques are considered with their aesthetic goals and standards of craftsmanship. For example, Dr O'Neale's study of Yurok and Karok basketry is replete with the ideational overtones of the craft (Lila M. O'Neale, *Yurok-Karok Basket Weavers*, University of California Publications in American Archaeology and Ethnology, vol. 32, pp. 1-184, 1932). If integration is a verity as a cultural process it should be demonstrable in material as well as immaterial forms of culture.

5 A. L. Kroeber, *Cultural and Natural Areas of Native North America* (University of California Publications in American Archaeology and Ethnology, vol. 38, 1939), p. 6.

ship of environment to culture, and while matters such as instinct, mental level, and schools of anthropology in vogue at the time somewhat obscure the main issue of his treatise, his "reaction point of view" may still be examined profitably.

> By reaction we mean the conception that external things and relations impress the mind so as to be at least the occasion for return action. . . . The problem for us is, however, Do such stimuli or impressions determine or modify culture?[6]

Nor did Dr Boas omit the environmental factor when he said,

> The explanation of the activity of the mind of man . . . requires the discussion of two distinct problems. The first bears upon the question of unity or diversity of organization of the mind, while the second bears upon the diversity produced by the variety of contents of the mind as formed in the various social and *geographical* environments.[7]

Without emphasizing the subsistence link which already has been the chief concern of culture-environment studies, the paper in hand will demonstrate how large a part of one culture was enmeshed with its natural surroundings. Environment herein is meant to include any or all externals of the culture and the people (culture-bearers), though, naturally, culture itself and even physiology are recognized as environment to the individual. For our present purpose the Yokuts and neighboring Western Mono of the Sierra Nevada foothills may be considered culturally one in spite of linguistic and other habitual differences. Emphasis will be on foothill rather than valley Yokuts, the Wukchumni in particular as exemplifying the norm of the cultural features described.[8]

II

The seasonal round of the year had three phases in native terms which fitted with the San Joaquin valley climate: Winter (tomo´kšiu) began about November and lasted through February; Spring (tisa´miu) was roughly March through May; and Summer (haiya´di) was from June through October.[9] These were: a cold rainy season when plant life was in a productive lull and habitation was

6 Clark Wissler, *The Psychological Aspects of the Culture Environment Relation* (American Anthropologist, vol. 14, pp. 217-225, 1911).

7 Franz Boas, *The Mind of Primitive Man* (New York, 1916), p. 103; italics mine.

8 The letter Y after a tribal name denotes Yokuts, WM, Western Mono. All ethnographic material unless otherwise noted is from the author's *Yokuts and Western Mono Ethnography* (Anthropological Records, in press).

9 A fourth season, Fall (wusa'o), was mentioned only upon inquiry, if at all, by my Central Foothill informants, and I believe it to be a modern interpolation. The Northern Foothill people clearly recognized a fall season, as indicated by my own and Dr Driver's informants (Harold E. Driver, *Culture Element Distributions: VI, Southern Sierra Nevada*, Anthropological Records, vol. 1, pp. 53-154, 1937, p. 150).

settled; next a season of warmth with stream, river, and lake floods, and stirring plant growth culminating in the massive blooming of field flowers and foothill shrubs; and then the long hot dry season of harvest seeds bringing a constant drift to temporary camps which ended with the gathering and storing of the staple acorn crop.[10]

The ceremonial round of Yokuts culture was closely fitted to the seasonal cycle of plant and animal activity. There was no winter ceremony unless possibly the oho´wiš, an indoor curing ceremony and shamanistic display involving fish and water animals.[11] This was a time for evening instruction by the telling of myths and by the forcing of boys and girls 10 to 15 years of age to rise in the night and bathe in chilly waters. Austere men concerned about their supernatural power and spiritual vigor would do the same. Indoor occupations flourished, although men hunted daily unless the weather were excessively wet and cold. Houses were patched against winds and soaking rains. Acorns were brought from main storage bins to individual store houses, thence to the dwelling to be shelled as needed. Men and women gathered in houses at dusk to drink the lime and tobacco emetic, then retired home to dream and secure supernatural benefits. By mid-December prospective datura-drinkers began to refrain from meat-eating. Shamans danced to prevent general sickness or to predict the next summer's seed crops.

In late February or early March came the first public ceremony, the drinking of tañai *(Datura meteloides)* by youths and others seeking special knowledge: dream help, second sight, or a view of their future life. This was never held later in the year because the plants were "too strong." The spectacle was attended by people of the local and adjacent communities. For the participants, the critical period was the twelve days prior to the drinking, in which a semi-fast was maintained, and the twelve following days during which meat was still tabu; at the conclusion of which time, as with all Yokuts festivities, a feast was given and meat eaten.

Soon after this (late March, April, and early May) the lavish, colorful blooming of wildflowers engaged Yokuts attention. Crowns of flowers, constructed like the shaman's feather crown, were worn by young and old of both sexes; armloads of flowers were plucked and danced to with special songs.

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10 Twelve "moons" were counted and named by both Yokuts and Western Mono, but no ethnographer has the complete record.

11 Described by both Kroeber and myself, not fully understood by either in description, meaning, or extent; not listed by Driver (A. L. Kroeber, *Handbook of the Indians of California*, Bulletin, Bureau of American Ethnology, no. 78, 1925, p. 507; Driver, *op. cit.*).

Pleasure came from their beauty, their fragrance, and their indication of a plentiful seed harvest to follow. Winter rainbows forecast plentiful seed crops, for they were seen as four bands of color (magenta, blue, yellow, orange) of four flowers whose seeds were prized.[12]

In April, when rattlesnakes were rousing from hibernation, came the very important Rattlesnake Ritual, sponsored by the shamans controlling the creatures, and participated in by all persons as a preventative from injury by rattlers during the summer months. This ritual, which included a snake-handling display and concluded with a feast, was attended by both local and extra-community persons.

On the lower Kings River, the Choinimni (Y) and probably other tribes within the area of the spring salmon run (about May) held a simple river-side ritual at their principal fishing sites. The local chief ate the first salmon speared, after cooking it and praying to Salmon for a plentiful supply. Then others partook of a salmon feast, and the season, so to say, was officially open. (Some foods were "moiety-owned," e. g., blackberries and mushrooms north of Kings River; the possessing moiety collected but could not partake until they had feasted the other moiety with the food.)

Disruption of village life came in late spring or early summer—from May onward, depending upon the condition of the seed harvest. Chiefs directed the general exodus in a minor way, publicly stating that now was the time to go, and families departed for their habitual summer camps. At these, men caught fish and small game which they dried for winter use, and, as the women collected loads of seeds, transported the heavy burdens back to the village storage bins. There were no special ceremonies for this season of dispersed households; instead local and more spontaneous entertainment took place: there is record of shamans dancing at summer camps; there were pleasure dances in which both sexes participated; children played late in the long evenings; and stories (myth-instruction) were tabu. Camp locations varied with the change of crops—toward the valley, into

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12 Play with flowers, so incompatible with conventional notions about Indians, was widespread in the West. Without especially seeking them the following references come to hand for Miwok, Maidu, Paviotso, Klackamas, and Taos: S. A. Barrett and E. W. Gifford, *Miwok Material Culture* (Bulletin, Public Museum of the City of Milwaukee, vol. 2, pp. 117-376, 1933), pp. 222-223; Stephen Powers, *Tribes of California* (Contributions to North American Ethnology, vol. 3, Department of the Interior, United States Geographical and Geological Survey of the Rocky Mountain Region, Washington, D. C., 1877), p. 325; Robert H. Lowie, *Notes on Shoshonean Ethnography* (Anthropological Papers, American Museum of Natural History, vol. 20, part 3, 1924), pp. 306-307; Melville Jacobs, *Texts in Chinook Jargon* (University of Washington Publications in Anthropology, vol. 7, pp. 1-27, 1936), p. 12; Elsie Clews Parsons, *Taos Tales* (Memoirs, American Folklore Society, no. 34, 1940), p. 121.

the hills—but all in all the moves probably encompassed not more than a twenty mile span, on the average, for anyone.

There is some evidence that early fall was a season of general sickness for people in the San Joaquin valley, especially for those in the swampy region near the lake. The evidence is tenuous; whether the illness was due to stagnant, contaminated or alkaline water, to heat stroke, to an increase in tularemia as the result of greater handling of rabbits and ground squirrels, it is impossible to say.[13]

September saw a return to the villages: winter storage preparations were made, and with view to the complete reëstablishment of normal community life plans were started for the great event of the year, the Annual Mourning Ceremony (luni´ša). To this end much material—foodstuffs in abundance, treasures of baskets, feather ornaments, money—had been prepared or saved. Preparatory loans already had been floated to be returned at high interest at the time of the festivity, usually late October. Necessary supplies of deer meat were obtained by special hunters at the very time of the event. Guests came by the hundreds. Obviously such large-scale entertainment could be managed only at the season of most plentiful food supplies.

Thus October saw the greatest of the year's festivities, the six-day ceremony of special rites, one for each day, climaxing in the all night mourning and distribution of wealth, followed by the ritual cleansing, and ending with a feast, game playing and dancing, the acquisition of foods, gifts, and exchanged treasures. These affairs might be held in two or three Yokuts-Mono tribes during this period (roughly late September to early November), and the same persons attend them, at home as hosts, elsewhere as reciprocal ritual participants, or as visitors.

November brought the final seasonal ceremony, the Bear Dance (nōhō´'o ka´maič), which marked the first use of the new acorn crop by all persons of the Bear lineages—sometimes for other people as well.[14] This brief but exciting performance ended with a feast of acorns prepared and served by Bear people to their guests, after which they themselves partook. The dance was timed to follow the final harvesting of acorns and coincided with the time when bears betook themselves to winter hibernation.

Thus ended the ceremonial year, with mourners released from their restrictions, with storehouses filled, with houses repaired, and with long evenings ahead

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13 A comparable summer sickness of waterfowl in this area is on record (Joseph Grinnell, Harold Child Bryant, and Tracy Irwin Storer, *The Game Birds of California*, Berkeley, 1918, p. 17).

14 Lineage attributes and functions have been described in the author's *Yokuts and Western Mono Social Organization* (American Anthropologist, vol. 47, pp. 409-426, 1945).

in which to tell the prehistory of the Yokuts world.[15] Six public ceremonies dependent upon or motivated by environmental changes had engaged the community's attention, interest, and support during the year: Datura Drinking, Flower Festival,[16] Rattlesnake Ritual, Salmon Rite, Annual Mourning Ceremony, and Bear Dance. There were no other important community festivities; that is, all whole-community or whole-tribal ceremonies were determined by the seasonal calendar. While other events of interest occurred and were witnessed as spectacles by those who cared to be there, those of greatest public importance all had basic environmental associations.

Trade relations of material importance to Yokuts and Western Mono were regulated by environmental conditions. Thus, during the spring when high water filled the sloughs connecting lower Kings River and the north end of Tulare Lake, large parties of Yokuts, e. g., Choinimni, traveled by balsa from the foothills to the lake area to fish, trade, and doubtless intermarry.[17] Cultural affinity between Northern Foothill Yokuts and Lake Yokuts probably in part is due to this large scale social intercourse made possible at the season of high water.

Trade relations between Eastern Mono (Owens Valley Paiute), east of the Sierra Nevada, and their linguistic relatives and neighbors of the Yokuts, the Western Mono, were limited to a few summer weeks when known mountain passes were open to foot travel. The trans-Sierra visitors, not welcome in Yokuts villages, rarely ventured alone beyond the Western Mono groups. However, occasionally a woman coming over with a trading party remained there for the winter: once caught on the west side of the mountains she had to remain till the following season. Sometimes she had a child with her, bore a Yokuts child, or was pregnant by the following summer.[18] The diffusion of the triangular winnowing tray and hooded cradle of Eastern Mono type amongst Yokuts women may have been abetted by this circumstance as much as by impersonal trade with the neighboring Western Mono.

In the southwestern section of the San Joaquin valley trade with the coastal people, e. g., Chumash, may have been temporarily halted by severe weather in the Tejon country (the intervening mountainous region), but not sufficiently to enforce long residence on incoming tradesmen.

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15 The adventures of the pre-human animals, not, be it noted, the history of the tribal unit, of humans, or of distinguished individuals, or of "gods."

16 Flower Festival is my label for convenience; public interest and reaction to the floral season was general and was patterned, but not welded into a named ceremonial form.

17 A unique account of such a trip is given in F. F. Latta, *Uncle Jeff's Story* (Tulare, California, 1929), pp. 29-31.

18 Always they eventually returned home to Owens Valley, I was told; none appear in Yokuts genealogies.

Thus two types of environmental factor, topographic access or hindrance, and "weather permitting" or hindering, affected the economic relation of the foothill Yokuts with their neighbors. Easy access does not necessarily mean exchanges of goods or other cultural items, but barriers do retard them. On the other hand, differing environments mean different products, and had Eastern Mono products been identical with Yokuts (yet equally inaccessible) the impetus to exchange would have been wanting. The topographic barrier was surmounted, but the weather barrier could not be, and it presumably served to maintain the strangeness and hostility between Eastern Mono and Yokuts, which only was assuaged temporarily and periodically by the presence of the mutually acculturated intermediaries, the Western Mono.

As suggested by the adjustments of trading periods to the seasonal environment, the physiographic setting was a factor in other tribal relationships and directional emphases. The plain or floor of the San Joaquin valley is abruptly ended on the eastern side by the rising wall of the Sierra Nevada; there is no slow progression. Of the foothills, the most meagre are treeless cones planted at the edge of the valley floor; behind them are higher, larger, interlocking cones blending into sharply massed mountains above which stand snow-capped peaks. This topographic antithesis was reflected in non-material culture of the Yokuts. A directional distinction of eastward, upstream, mountainward (no´tu) versus westward, downstream, plainsward (to´xil; da´ṭu) gave names to the moieties (where they occurred): Nutuwich, Tokelyuwich; it regulated spatial arrangements at large ceremonies; wars and competitions in myths were attributed to uplanders and lowlanders; and in cosmogonic beliefs eastward beyond the mountains is the mysterious "home" of the supernatural animals, while westward beyond the ocean is the "home" of the dead, a place of feasting and merriment.

Other directions of the conventional six were also important.[19] North (hosi´m) and south (homo´t) were constantly used as general designations for other Yokuts people, individuals or groups, when the tribal name was not known, i. e., "northerner" (hoso´mo), "southerner" (humti´nin). East and west (nutu´wič; tokelyu´wič) were rarely used for directional labels for tribes, not because they were moiety names (which the Central Foothill Yokuts lacked entirely) but because the east-west span of the valley is short, and close knowledge of neighbors by tribal name ran along the east to west flow of the streams. Comparably, the intervening watersheds discouraged north-south travel. In general, westerner (to´kya) was a term for any people living far west or southwest of

19 Usually named in order: S, W, N, E, U, D. (No color symbolism was associated with direction.)

the Yokuts (e. g., Salinan, Chumash), while collectively unknown eastern groups were called mountaineers (do´mtui). The north and south dimensions of the valley are greater, and tribal contacts in the floor of the valley were so aligned along the water flow between Kern, Buena Vista, Tulare Lakes, and the lower San Joaquin River.

Of the two other directions, up (ṭi´pin; sky, above) and down (ati´l), the latter had no special significance beyond myth reference to an underground gambler whose home might be reached via a badger or gopher hole.[20] Upward, "aboveness," was of great religious significance, the embodiment of sacredness and supernatural power. Veneration was manifest in many ways, especially in a religious-motivated looking upwards, looking at the stars and sun with prayerful phrases on the lips, basking in the sun, getting magic "airshot" from the sun during shamanistic contests. Supernatural power was called ṭi´pni; it was the essence of all "aboveness" and the power derived therefrom, though the term might be applied to anything weird, holy, or peculiarly hyperphysical.

To the earth itself (di´nit) there was no special attitude, nor to the plants growing on it save the narcotics tobacco (so´'og) and *Datura* (ta´ñai). For example, for all the essential uses earth was excavated without special concern—house, sweathouse, or grave pits, for pottery, colored earths for paint. Similarly ordinary stones were taken for implements, motars and pestles, though previously shaped stones such as the "charmstones" of weather shaman, were regarded with awe, as ṭi´pni.

On the other hand, water (i´dik), especially that of springs, was venerated: "water is immortal because it is everywhere; it is living all the time." Springs were addressed prayerfully, sacred eagle down was scattered near them, and a little water was sprinkled on oneself with a request for long life. Other expressions of this attitude are found in early morning bathing (more than a mere cleansing act), and in myths, wherein submersion or application of water was the standard method of magical resuscitation.

The stars were not ignored; on the contrary, the Morning Star especially was of great importance: people should be up in time to see it, greet it with a prayerful request for "a good world" and longevity. The Pleiades gave luck to gamblers; other stars were dangerous lures to men. Eclipses of moon or sun were hailed with shouts of discouragement, and excessive thunder was admonished to cease. In short, even heavenly bodies were part of the immediate, reachable environment.

Aspects of time, of the place of animals and of man in the world were em-

20 There was no concept of stratified worlds, or of previous and successive worlds.

bodied in Yokuts verbal narratives (mythology). The grand chronology was divided into two major parts—a remote past or prehuman era, and recent times or human era—an ancient "then" and an immediate "now." The prehuman era was that of a world created and occupied by birds and animals of superanimal and superhuman powers. To Eagle, with his bird and animal assistants and companions, was attributed the building of the world, the institution of certain cultural, social, and physical features of man and his way of life. This prehistoric period, described in a fairly full but not elaborately detailed stock of stories, came to an end with the creation of mankind by Eagle and the subsequent transformation of these bird-and-animal people into their present known forms. All this happened beyond the memory of man, but the past continued into the present in the immediate ubiquity of the animals themselves. Beliefs about them were being constantly reinforced by daily happenings in the circumjacent wilds.

The "earth-diver" creation myth was singularly appropriate for the San Joaquin valley people: in aboriginal times the valley bottom was filled with water and as far as the eye could see stretched tule beds thriving along the innumerable sloughs and swampy shores. At least once in the memory of each generation the seasonal flood increased to enormous, alarming proportions. Entirely congruous then, was the belief that once the world was all water and that Eagle, in his omniscience, asked Duck to dive and bring up a speck of sand from which to make a solid earth. Then Falcon and Crow, each flying north on parallel routes, dropped earth to form the pair of mountain ranges, Coast on the west, Sierra Nevada on the east. Coyote stole the sun to provide light, and Jack Rabbit stole fire which Bat had discovered. Falcon and Crow got Tobacco, which gave itself to them; Deer gave himself as food; Cougar hunted him, though Coyote spoiled easy success; Bear made a sweathouse and showed other animals how this should be done; all animals save the carnivores drank *Datura* ceremonially. Eagle wanted immortality, but Coyote argued against it, thereby losing his son, Blue Lizard. Falcon was a hero; his wife Duck, when stolen by Condor was sought by Crow and Bottle-Fly. When Eagle finally created man, Lizard offered his hand as a model. Then Eagle felt the animals should leave and he gave each his choice of habitat and of future service to human beings, as (beside those named above) Skunk and Owl would help shamans, Quail would help women in childbirth, and so on. Then they all "flew off" eastward where today they still exist and know how mankind treats their counterparts on earth. During the animal or prehistoric era the social system was like that of today: Eagle the chief, Dove his messenger, Coyote a clown, Magpie an advisor, and so on.

To sum up, Yokuts verbal narratives embodying world history pictured a prototype of the world as they themselves knew it: man and animals changed places, so to say. And, if Yokuts imagination projected backwards the social system of their present, it no less brought forward and attributed to living animals the power they had in the past. Hence, the Yokuts view of the animal world was of more than a subsistence potential. Animals were a power potential as well. It is notable that mythic interest and importance was spread among several species of birds and animals; a few were important but there was no single hero or trickster who usurped the spotlight.

This rather tedious recital leads to a most characteristic circumstance of Yokuts and Western Mono culture: that men and animals are peers. The animals were here first; today all dwell together, and while men may exploit these creatures for food and power they may not do so without due regard for their reactive and capricious qualities. It is difficult to convey the subtleties of Yokuts-Mono attitudes, their own position relative to other living beings in the world, without resorting to anecdote. As an example, then:

> Palaha, who was a fine hunter, told of an experience. He set up a rude platform in an oak tree where he intended to hide just before dawn to drop acorns down as a bear lure, then shoot the animal as it fed. He went out as planned—it was barely light. As he came under the tree something hit him on the head; acorns were falling from the platform. Looking up, he saw a small bear standing on the framework and nuzzling at the hoard of bait which rolled off the sides. This Palaha thought excessively funny: that their postions should be reversed, and that the bear was doing to him what he had intended doing to the bear. But beyond this was the sense that the bear thought it funny too, that somehow it was intentional on the animal's part to indulge in a humorous trick.

So often has this intangible appeared when Yokuts or Western Mono speak of the activities of birds and animals that it is clearly an unconscious or unvoiced attitude of equivalence as living creatures in one small world.

The most potent and personal association between the Yokuts-Mono and their faunal contemporaries was manifest in the combination of social and religious systems which provided an animal symbol of patrilineal source to every person. This creature was no less a source of supernatural power than others of the animal world which might be approached for aid if superhuman enablement were desired. A specific relation between tutelary and protégé (po´ša and pošá´m, respectively) existed both for the totemic (patrilineally inherited) animal and for the randomly sought individual animal patron. There was probably no person in Yokuts and Western Mono society who did not have what we may call a social symphysis with some animal, at least in incipient form, and in most

cases moderately strengthened by reverential observances such as abstinence from its flesh (compulsory for a totemite), propitiation by prayer and eagle-down offerings, dream contact, and possession of a sacred symbolic talisman. In most highly developed form for shamanistic or power quests, these behaviors became a personal preoccupation essential to the maintenance of a beneficent attitude on the part of the animal tutelary .

The reverence for Eagle, Falcon, Cougar, Bear, Coyote (and lesser creatures in lesser ways) was actualized in ceremonies performed over their carcasses by persons of those lineages they symbolized, and witnessed by the usual audience of interested and, in part, participating villagers. The hunters of deer had to observe care in handling their kill. The underlying motive of these acts was that animals who were not "treated right" on this earth, at death reported to their prehistoric counterparts in their eastern home, and the offended creatures would no longer give their support (as either a subsistence or a power source) to the transgressor.

Although in theory it was the primordial animal in its vague eastern home which motivated its living counterpart, it was the latter with which the people were concerned. The reverential relation was a direct one, and in turn it was from the actual animal that help came. Many anecdotes from Yokuts and Mono describe how the tutelary suddenly appeared in a moment of need, though the mechanism of help, beyond a mere appearance, is left undefined—presumably it was "power" (ṭi´pni) that forced success.

The personal-and-animal association was formalized socially in professional shamanism and politically in the official capacities of chief, messenger, and dance manager—cultural elaborations which have been described elsewhere. And the informal culture of Yokuts and Western Mono abounded in minor, casual usages and references to faunal life.

For the sake of rounding out the picture and not emphasizing exclusively the aspect of culture with which we are concerned, a brief note should be made of Yokuts rituals which were not related explicitly to the extra-personal world. Brief is sufficient, for there was only one set of rituals, that for "life crises," which were not engaged with or dependent upon some seasonal condition in nature. These were the naming of an infant, the mother's cleansing rite, girl's puberty (betrothal) rite,[21] and the private mourning ceremony. With the exception of the naming ceremony all were ritual cleansing ceremonies following the

21 A formal marriage by gift exchange might occur after the betrothal at first menses, but the two rites were not clearly separated by Yokuts and Western Mono; either or both might be made, but the second was not emphasized and seldom followed the first.

standard pattern of ritual laving, gift exchange or ritual payment, and feasting. In a sense, the great Annual Mourning Ceremony combined two ritual series for Yokuts and Western Mono: basically it was an exaggerated form of the private or family mourning ceremony, but because of its size and consequent dependence upon adequate food supply it necessarily occurred in a season of abundance. Thus the seasonal, public, or community ceremonial series, and the non-timed, private, or familial series were combined in the Annual Mourning Ceremony. Both series had a feature in common: they were concerned with initial occurrences of certain events, those in nature of yearly repetition, and those of the individual life which, once acknowledged, were usually allowed to pass unnoticed at later recurrences. The formal purification of the person by washing, in the private rituals, is indicative of the different psychological character of that series.

III

The dependence of subsistence and material culture (food, medicine, shelter, weapons, raiment, utensils, ornaments) upon environment is basic and of tremendous importance in all cultures so primitive that no extraneous supply of these things are available to relieve the people, as individuals or communities, from direct concern with their immediate natural resources. From the outset, we have taken this for granted as the fundamental culture-environment relationship from which, for Yokuts and Western Mono like almost all other North American Indians, there was no escape. But for these people the cultural concern with natural surroundings was not limited to utilitarian value.

Yokuts and Western Mono ceremonies were engaged with environmental features of annual recurrence, and cosmic cultural history, religious beliefs, official status, and family relationship symbols were associated with their faunal co-habitants.

This is a culture-environment form of integration of more than a merely mechanical sort: features of the environment which are not essential to basic subsistence are caught up into the ceremonial, social, and religious superstructure. Does this mean that a culture which carries more environmental references is less subject to change—is more stable—than one which has less? The general question cannot be answered with our data, but so far as the culture here used in demonstration of the problem is concerned, it would seem reasonable to assume that Yokuts-Mono culture, because of the form its interest in externals took, was held to its pattern by environmental stimuli.

With the exception of terrain (though perhaps in a locale subject to flood even this need not be excepted), "environment" is not a static thing—with a

thousand complexities it lives and moves in constant impingement upon simple dwellers on the earth. Much of that life and movement is regular and repetitive: the weather, floral, and faunal changes on a broad seasonal scale, and lightness and darkness, sun, moon, and stars, temperatures, animal and floral behaviors were on schedule in the narrow diurnal round.

The reiterative factor would seem to be an impressive one in the maintenance of cultural activity which has once been linked to it: the right time comes for a complex of behaviors—a ceremony—and that time is an ephemeral thing which the culture must meet in a series of events of immutable order. The natural schedule cannot be changed, and the ceremonies are performed—if they are to be performed at all—at the convenience of the environment, not the convenience of the people, so to say.

External reminders of cultural forms were met at any turn in the trail, on every hand, day in and day out, where animal creatures roamed or flew. They were living symbols of themselves in the religious and political systems of Yokuts-Mono culture, and as inescapable in their roles of superhuman contributors to the mode of Yokuts life as were any utilitarian plants or trees which provided materials for foods and tools. Inasmuch as the environmentally attuned parts of Yokuts-Mono culture were nuclear or thematic the natural features in which they had their basis may be said to have some dynamic force as cultural integrators in the functional sense.[22]

However, I am too uncertain as to how integration (as a cultural process) may work in actuality to wish to propose that cultural changes away from these forms could not occur. For example, the symbol might become more important than the actuality, e. g., the weazel's skin, the shaman's sacred talisman imbued with supernatural power, might usurp the shaman's concern with the beast itself in real life and in his dreams. Shifts in emphasis are unpredictable and entirely possible even while forms still are mechanically adjusted to external features. The mere fact that a thing—say Eagle—has one hundred connotations in Yokuts culture against one of Goldfinch does not preclude loss of Eagle's role in that culture, although the greater entrenchment is in his favor.[23]

I do not want to evade the psychological aspects of cultural integration for it seems to me that no full discussion of it as a dynamic or functional process can

22 See Opler, *Themes as Dynamic Forces in Culture.*

23 A somewhat amusing aside here: the appearance of metal money with Eagle thereon was in perfect conformity with aboriginal Yokuts thought. Eagle, as the symbol of the chiefly lineage and as the dream-helper for acquisition of wealth, was manifestly not only the rightful but the inevitable imprint for the invading White culture's coinage—as informants frequently and proudly pointed out.

do so profitably; yet this phase of integration is too complex to be entered into here and is really tangential to our focal interest—environment in culture. Hence only a few points will be mentioned.

First, the reiterative mechanism of seasonal environment may set up a conditioned response in the individual reared in a seasonal ceremonial routine. We are accustomed to consider "conditioning" in small neural units, or as specific behavioral components, yet, in so small and simple a society as a Yokuts or Western Mono village the larger rhythms of social life must impress the infant from birth onward with increasing clarity and firmness. Just as the gross culture configurations are being absorbed, so must be the culture-environment configurations, and the environment's own configurations. By the time a youth has reached the verge of adulthood, the annual cycle of cultural events moving with the environmental cycle of weather, floral and faunal changes, has been repeated fifteen times. By this time too, the symbolic meaning of certain animals for his individual person—as primordial activators of his way of life, as tabu foods or as legal kill, as patrilineal totem, as source of supernatural powers—have been established, and he bears a personal relation to various animals, manifest in respectful actions. These actions are constantly evoked by the immediate presence of these creatures in his daily, common living as a Yokuts.

Dreams of animals were essential as a source of supernatural powers and came both unsought and sought to these people. No depth psychology is needed to understand the composition of their mental imagery, which had these things, and almost only these things, to draw on, in fact could not escape nor exclude them from constant sight. It has seemed probable to me, though I have no absolute evidence, that a considerable part of the Yokuts' occupation of thinking about ("day dreaming" about) animals, perhaps preferred ones if certain specific powers were desired, constituted as normal a mental activity as, say, reading in our own culture. In a sense, it was a pastime concerned with something not necessarily present, with standardized mental symbols and imagery but in no sense psychopathic unless (in either case) carried beyond the average behavioral norm. For Yokuts, any one who wanted to could have some minor supernatural powers, as convenient and useful; extremists became professional shamans.

There is some suggestion in my materials and experience with Yokuts and Western Mono persons, that considerable emotion and anxiety surrounded the dream-helper animal once a constant relationship had been established between tutelary and protégé. Emotional pleasure, pride, and satisfaction ("security" perhaps) in the tutelary's benevolence, and anxiety over loss of this benevolence through either offense to the animal or of loss of the power to a malicious

shaman, was exhibited time and again. Of this I am sure: that the sense of intimacy between a person and "his" actual animals in the environment was deep and real. Thus, for example: "Rattlesnake is my poša; if he'd bitten any other horse it would have killed him sure—but it didn't kill *mine*";[24] "Eagle was mad at me; that's why my baby was sick" (excessive milk curds diagnosed as Eagles faeces in an infant's mouth). This association, between an individual and an animal, routed through the religious or social system, is the personalized aspect of the more general human-animal equation appearing in broader terms in the culture (as exemplified in the earlier anecdote).

In a culture with both material and intangible concern for features of its natural surroundings it seems difficult to dismiss environment as "of rather minor importance in personality formation."[25] Even though, "between the natural environment and the individual there is always interposed a human environment [culture] which is vastly more significant,"[26] the role of external environment in the human environment (culture) can be of major importance and therefore, through the cultural mechanism, be of deep psychological significance. It is possible that a basic element of the mental state known as nostalgia, or the state of intense uneasiness in strange surroundings, is the year by year, life long conditioning of an individual to a specific topographic configuration, flora, and fauna.[27] The subtle interplay of locale or geographic form and personal psychology have been disclosed in a recent study of Yurok childhood orientation.[28]

The intense immediacy of native environment in all its aspects is a condition not too easily realized by the academic field investigator from our own denaturalized civilization, especially when the people under study already have lost their aboriginal setting—as have most of our North American Indians. The natural condition might be succinctly stated as: the less culture, the more environment. The anthropologist is hyper-conscious of the cultural mechanism as the selective or distorting lens through which the native views his environment. But for the native the lens does not exist; he deals directly with the externals which impinge upon him. Environments are seen and modulated in terms of the reacting cul-

24 The ill-logic (in our thinking) that a "benevolent" rattlesnake should have bitten the man's horse *at all*, is completely submerged in the prideful satisfaction that the horse did not die, was merely temporarily ill and recovered.

25 Ralph Linton, *The Cultural Background of Personality* (New York, 1945), p. 11.

26 *Loc. cit.*

27 Cf. Morris Edward Opler, *Dirty Boy: a Jicarilla Tale of Raid and War* (Memoirs, American Anthropological Association, no. 52, 1938), pp. 12, 33.

28 Erik Homburger Erikson, *Observations on the Yurok: Childhood and World Image* (University of California Publications in American Archaeology and Ethnology, vol. 35, no. 10, 1943).

ture, but the impact of externals is there and cannot be expunged from a plenary consideration of the factors affecting integration (or the lack of it) in a total culture.

So extreme have been the controversial views on the determination or non-determination of culture by environment that we have eschewed the problem where the more flexible or intangible portions of culture are concerned, leaving Wissler's query on the effect of external stimuli on the mind of man still unanswered.[29] Since few would doubt that primitive cultures are adjusted to their local environments, it would seem well to move toward an analytic examination of the specific kind and degree of articulation we may find in a variety of cultures, or of divergences in basically identical cultures in a similar environment (e. g., Maidu, Miwok, Western Mono, Yokuts, along the central segment of the Sierra Nevada foothills). Culture as a spatial and temporal continuum should present new formulations of integration as analytic attention moves from culture to culture geographically and historically, and the environmental ingredient at each phase may offer some clues as to the relative persistence of the nuclear patterns.

Santa Cruz, California

29 Kroeber's previously cited *Cultural and Natural Areas of Native North America* deals with cultures in gross and as categorized by our "culture area" systematization; emphasis is on terrain, ecology, population, economic surplus, and culture climax.

MOCHICA (EARLY CHIMU) AND OTHER PERUVIAN TWILL FABRICS

LILA M. O'NEALE

INTRODUCTION: THE MATERIAL

DURING CERTAIN PERIODS in Peruvian prehistory, the ancient weavers evidenced pronounced interest in embroidery, or brocading, or gauze, or other technique. There appears at no time to have been a comparable interest in twills. Their rarity cannot be explained. It seems extraordinary to an analyst that craftsmen whose imagination and ingenuity have been repeatedly and conclusively proven should not have exploited a method of interlacing threads with such manifest texture and pattern possibilities. In addition to the ornamental effects resulting from the many ways of weaving twills, materials made by that technique can be firmer, heavier, and more wear-resistant than plain-weave cloths produced from similar yarns. And, since the basic twill types are known to basketmakers and mat weavers the world over, the technological complexities should not have been found insuperable. The intricacies of the twill are far less apparent to present-day craftsmen than those of gauzes, say, and yet patterned gauzes come from Paracas Caverns' sites.[1]

Among several thousand Peruvian cloths examined over a period of years, I have encountered only seventeen pieces all or partly twill-woven. Eight of the number come from three Early-period graves—Nos. 16, 17 and 26—in Dr Max Uhle's Mochica Site F at Moche on the northern coast.[2] The remaining nine represent the following proveniences and time periods: Chancay, Site E, an "unspecified" site as between White-on-Red and Interlocking pre-Tiahuanaco (1),[3] Aramburu, "Early" Lima (1), Cerro del Oro, Middle Cañete (2), Ancon, Late period (1), Ate, Late Lima (3), Poroma, Late Nazca (1). From this brief list the very active weaving centers in the Ica and Chincha valleys are conspicuously missing.

The twills, other than those in the Mochica series, comprise five all-wool weavings, three all-cotton, and one union specimen combining cotton and wool,

1 L. M. O'Neale, *Textile Periods in Ancient Peru: II, Paracas Caverns and the Grand Necropolis* (University of California Publications in American Archaeology and Ethnology, vol. 39, no. 2, 1942), pp. 177, 178.

2 A. L. Kroeber, *The Uhle Pottery Collections from Moche* (University of California Publications in American Archaeology and Ethnology, vol. 21, no. 5, 1925), pp. 199-204.

3 A. L. Kroeber, *The Uhle Pottery Collections from Chancay* (University of California Publications in American Archaeology and Ethnology, vol. 21, no. 7, 1926), p. 267.

the wool employed in the decorative border which is woven on the basic cotton warps (Plate 5 D).

Each of three incomplete lengths of wool materials—9 inches by 19 inches (Plate 5 C), 22 inches by 19 inches, and 32 inches by 18 inches—has two side selvages. These are probably garment fragments. The small wool piece from Poroma and the unusually heavy Ancon fragment (Plate 6 A) can also be tentatively added to this group on the basis of textures.

Three cotton shirts from Ate in the Lima district are represented by fragments—10 inches by 18 inches, 26 inches by 10 inches, and 31 by 11 inches. The materials are incomplete as to width, but there is one loomstring edge (Ate 2464) with a decorative red tape applied to it. These specimens leave no doubt that cotton twills were woven to garment dimensions.

It is not possible to know from the appearance of a fragmentary Peruvian textile that it is or is not representative of the yarns, techniques, patterns, or colors of the original web. The reason is simple: there is nothing about the primitive loom to compel repetition, and furthermore, it was common practice among the coastal Peruvian weavers to change abruptly from one to another or several others quite dissimilar to the first. This shift might or might not entail variations in the colors and patterning. It often appears to have done so.

There are only four specimens among the seventeen about which one can be certain as to the part played by the twill-woven sections. The Late-period Ancon piece (Plate 6 A) is virtually all in warp-pattern weave with the twill section a sort of finish on the edge, perhaps a decorative selvage, and the Ate shirts combine plain and figure twills with the simple cloth weave. As for the others, the tiny fragments representing the Early period were all salvaged from among copper and silver specimens. We are extremely fortunate to have them in any state of preservation, but they offer not the slightest clue as to how large a section was twill-woven. The Middle-period Chancay piece appears to be an all-twill material, but the three others from the same period combine twill with plain over-one, under-one weave (Cerro del Oro 169678 a,b) and with tapestry (Aramburu 169415 b). The Poroma fragment (Late) is all-twill material but too small to indicate the weave of the whole textile.

THE TWILL WEAVE

In structure, the twill is entirely different from the plain weave, yet its distinguishing features are easily recognized despite the numerous forms and combinations with other weaves for decorative purposes. The twill's clearest identifying characteristic is the diagonal line, rib, ridge, or wale, invariably visible on the face of the fabric. These diagonal ridges differentiate the simplest twill from

the plain weave. The method of interlacing the weaving elements accounts for them.

In plain weave, the weft element is regularly carried over and under one warp at a time, or over and under an indivisible unit of two or more warps as in the basket weaves. In contrast to this procedure, weaving the most elementary twill, the three-thread repeat, requires that the weft element be carried over one and floated under two warps, or vice versa. In twills involving more threads in the repeat, the floats are longer. This difference in the method of interlacing warps and wefts results in short and long intervals between the intersections of the weaving elements.

A second basic difference between the twill and the plain weave has to do with progression. In ordinary twill weaving, there are no indivisible warp units as there are in plain weaves of the basket types. The twill weft in its passage across the web progresses, or moves, one or more threads to the right or to the left of each previous point of intersection with the warp. In so doing, the weft regroups the warp threads in a unit and forms a minute step in the diagonal ridge developing upward. This is similar to the cross-section of a flight of stairs. The wefts form the treads, their widths dependent upon the length of the weft floats; the warps form the risers, their height dependent upon the length of the warp floats.

Twill Types

The effects achieved through weaving in twill technique are implied in the contemporary terms "simple" and "fancy." In simple twills, the diagonal ribs are uniform in width: narrow or wide as a result of accentuating one of the weaving systems. In the so-called fancy twills, the diagonals may be of several widths or they may form geometrical motives (Plates 6 C,D, 7 A). Some of the fancy twills, technically speaking damasks, are like the simple twills in being reversible. It is frequently convenient to designate the sides of a twill-woven fabric as "surface" and "reverse," but in reality the only difference between the two lies in the direction taken by the diagonals and in the amounts of warp and weft visible. If the warp floats make ridges, the fabric is a warp-face twill; ridges formed by the wefts make it a weft-face twill. Either type represents an unequal division of the threads in the warp unit. An even twill, like the two-up, two-down and the four-up, four-down twills has as much warp as weft showing on either face of the cloth (Plates 4 A,B, 7 C).

Continuous, Reversed, and Figured Twills

When the surface of a fabric is marked by wales extending unbrokenly from one side edge to the other (Plate 4 A,B), it is called a continuous twill. Com-

mercial twills are "standard" if the diagonals extend upward to the right, and "reverse" if they extend upward to the left. The differentiation is based on finishing treatments given to the cloth after taking it from the loom, not on a structural feature. For consistency, all diagrams in this study show the standard direction of the wale despite the fact that photographs of some specimens show the obverse side of the cloth and the wale in the reverse direction.

If the direction of the twill diagonal is regularly reversed at short intervals either on the horizontal or the vertical axis, the twill is known as a zigzag or herringbone or broken twill. The difference between these will be developed later. If reversals in the direction taken by the diagonals are made on both horizontal and vertical axes, diamond and lozenge patterns are the results. Literally thousands of these basic types—continuous and reversed—can be produced, yet their relationships to each other are revealed through the presence of shorter or longer wales. These are to be discovered even in the complicated figured twills (Plate 8 A-C).

The Twill Diagonal

The prominence of the diagonal rib and by implication the effectiveness of the twill weave as a patterning technique is accented by certain features. One of these involves the length of float. Long floats in either system develop bolder ridges than do short floats.

A second factor with a very appreciable influence upon the prominence of the twill diagonals is the thread count per unit of measurement (in this paper, the inch). The material recorded in the accompany graph (Fig. 1) is not altogether satisfying because accuracy in our observations is an impossible achievement. The Early-period pieces are so small that some thread counts must be calculated on the basic of quarter-inch areas (Plate 7 A-C), a procedure which quadruples errors. Also, thread counts may vary with each handling of the fragments. Both sets of weaving elements presumably have loosened in a fragment less than a half-inch each way, and even in the larger ones, length measurements range between 1¼ and 4 inches, widths between ⅜ inch and 5½ inches. Original compactness of textures cannot be expected. Obviously, the extreme fragility makes placing any tension on them out of the question. Count, then, as well as observed degree of wale angle is relative. The degrees of angle resulting from certain ratios (Table 1) have been helpful checks.

If the warps and wefts within a unit of measurement approximately balance each other, the diagonal ridge built up by twill floats falls midway between the vertical warp and the horizontal weft. Five twills representing Early, Middle, and Late periods come near this specification with wale angles between 40 degrees

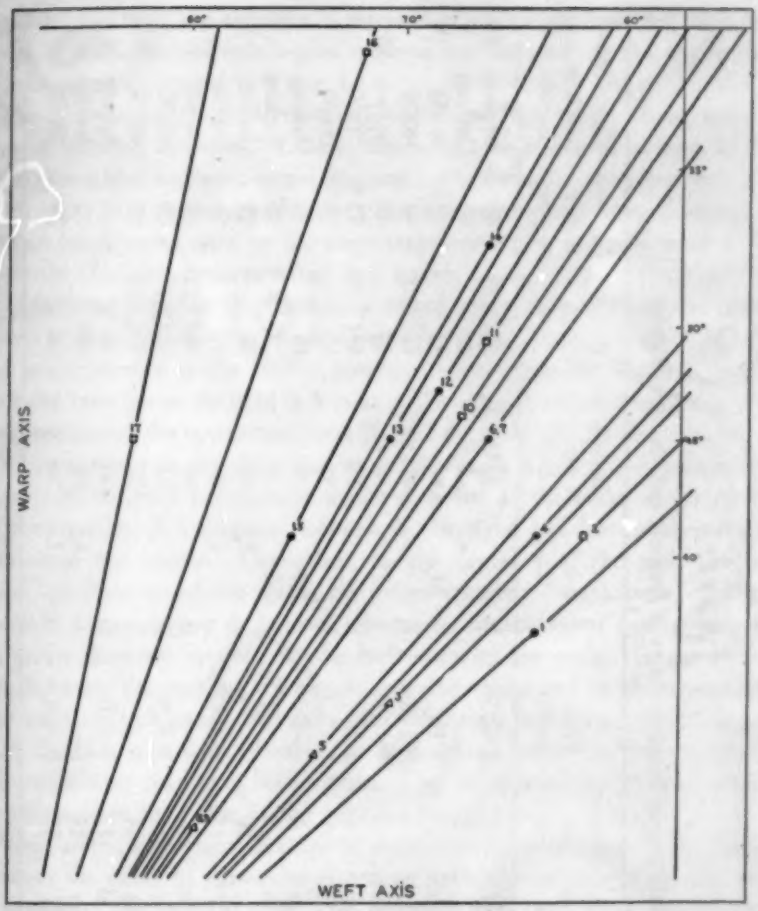


FIG. 1. Graph to show relationship between inclination angle of twill ridge and warp-weft count per inch. Numbers correspond to those in Table 1. Solid circle: Early-period twills; solid triangle, Middle-period twills; open square: Late-period twills.

and 50 degrees. In this group is the twill with a diamond pattern (Plates 6 C,D).

If the wefts perceptibly outnumber the warps, the angle of wale inclines toward the horizontal and the twill is a low or reclining type. Modern cashmere is an example; there is none in the small group of ancient twills.

If the warps per inch perceptibly outnumber the wefts, the angle inclines

TABLE 1

Relationship between the twill diagonal and the thread count

Ratio warps to weft	*Degree of twill angle*	*Specimen number*	*Number on graph*	*Plate number*	*Period* E	M	L	*Warps per inch*	*Wefts per inch*	*Expected angle in degrees*	*Observed angle in degrees*
1:1	45	4–3097f	1	6 C,D	E			40 (×2)	44 (×2)	43	approx. 45
		2618	2	——			L	48	48	45	lacking
		169415b	3	5 D		M		34	32	47	40-50
		4–3292	4	7 B,C	E			48 (×2)	44 (×2)	48	40-50
		4–7008a-c	5	5 C		M		30	26	49	approx. 50
1.5:1	56.3	4–3089b	6	4 E	E			56	40 (×2)	55	50-60
		4–3097e	7	4 C,D	E			56	40	55	50-60
		169678a	8	——		M		24	16	56	lacking
		169678b	9	——		M		24	16	56	lacking
		2435	10	——			L	58	38	57	lacking
		2464	11	8 A-C			L	64	40	58	50-60
2:1	63.5	4–3097b	12	——	E			60	36 (×2)	60	50-60
		4–3097c	13	5 A,B	E			56	32 (×2)	60	60-70
		4–3291a	14	7 A	E			72	40 (×2)	61	60-70
		4–3097d	15	4 A,B	E			48	24	64	approx. 65
3:1	72	171362e	16	——			L	88	30	72	lacking
5:1	78.5	16–967	17	6 A,B			L	56	12	79	70-80

toward the vertical. The majority in the twill group are the so-called steep twills. Several of their observed wale angles conform approximately to the angles resulting from ratios as entered in Table 1.

The boldness of the twill diagonal also depends to some extent upon the choice of weaving elements. Coarse, smoothly spun yarns like those in Plate 6 A, B give added emphasis to the diagonal. Hard-twisted two-ply yarns (Plate 4 C,D) produce a much more distinct ridge than can loosely twisted yarns. On the other hand, yarns spun to the crepe stage are strong but they tend to kink and partly blur the distinctness of any weave.

When loose fibers in the form of a strand are spun into yarn, the twisting registers as lines spiralling to the left or to the right along its length. The left spiral is comparable to the central portion of the upper-case letter S, and the descriptive term given the yarn is S-twist. The right spiral is comparable to the central portion of the upper-case letter Z, and the yarn is a Z-twist.

In consequence of the difference in the direction of the spiral, wherever the diagonals of the twill run counter to the direction of the twist, as for example in a combination of a diagonal upward to the right and left-spiral yarns, the ridges stand out boldly. Conversely, to the degree that the twill diagonals parallel the direction of the spiral, the ridges appear inconspicuous. Designers of modern materials may deliberately choose for a continuous twill a yarn with twist in the direction opposite to the inclination of the wale. In the reversed twills, however, the seeming differences in color values and in the accentuation of the wales come about automatically with the change in direction of the diagonal (Plates 5 C,D, 6 A,B). Weaving a herringbone twill involves choice, one which conceivably may have been motivated by an appreciation of the light and dark effects given the fabric by the twist put into the yarn.

Paired wefts, a technical feature of six of the eight Mochica twills, tend to counteract the effect of yarn-twist directions upon the prominence of the wales. The combined diameters of two wefts not only slightly increase the length of the warp floats forming the diagonals, but twin wefts create strong horizontal lines to accent their own visible ridges and thus vie for dominance with those formed by the warps (Plates 4 E, 5 A,B, 6 C,D, etc.).

A LOOM FOR TWILLS

In the light of the series of twills from Uhle's Site F at Moche, the matter of the Peruvian loom must be re-examined. The main features of the loom, as we know it from direct evidence, are essentially those of the contemporary two-bar looms in different parts of the world. The type is variously referred to

in the literature as the backstrap, belt, waist, or stick loom. Uhle's Mochica collection contains no actual loom, and since the climatic conditions on the northern Peruvian coast are destructive to wooden objects as well as to textiles, there may never be an intact one for study. Chiefly for that reason, important evidence is furnished by a rare piece of pottery in the British Museum. Joyce gives a brief description of a loom depicted on a vessel from a Chicama valley grave.[4] He interprets the scenes painted around the three-inch flaring rim as representing the activities within a long weaving shed with matting roof. Women weavers sit at work at back-strap looms. Each is copying (?) a patterned piece; by her side is a loop-handled jar for water or other drink. The loom details are standard: the upper bar attached to a house post, the slanting web, the lower bar with belt to encircle the weaver's waist.

Joyce infers that because there are no heddles on the looms the women are "engaged in tapestry and not true weaving." He also finds in this vase painting the suggestion that the true loom had not yet been developed in the North. Fortunately, a solution of the question of when the heddle appeared among people of Mochica culture does not depend upon a piece of ceramic evidence. Unless we are to imagine they did all or part of some rather ambitious weaving solely by finger work, certain at least of their looms were developed far beyond those adequate for tapestry or the ordinary brocaded fabrics, both of which were known in Early periods on the southern Peruvian coast.

Weaving Methods

To weave a twill calls for calculations and effort regardless of the method by which it is accomplished. Fifteen of the seventeen twills in this study required four divisions of the warp elements. The ordinary backstrap loom with shed roll and one heddle stick furnished controls for only two divisions, the odd-numbered and even-numbered warps.

There are three methods by which the Peruvian twills might have been woven:

Method 1—By painstakingly lifting up each single warp or each unit of two, three, or four warps with the fingers or small warp-raising device, or by darning in and out through the warp plane a slender sword to segregate the groups to be raised when it was turned on its edge. Elemental procedures like these are characterized as "picking in" or finger weaving. They are known to all weavers.

Method 2—By inserting through the warp plane—under and over the warps

4 T. A. Joyce, *The Peruvian Loom in the Proto-Chimu Period* (Man, December 1921, pp. 177-180), fig. M *a*. Among other reproductions are those appearing in Gösta Montell, *Dress and Ornaments in Ancient Peru* (Gothenburg, 1929), fig. 54, and P. A. Means, *Ancient Civilization of the Andes* (New York, 1931), fig. 2.

involved—a requisite number of small sticks in proper order to completely develop the pattern repeat. With the exception of the Poroma and Ate three-thread twills, the other continuous and all the herringbone twills would require four pattern sticks, or three in addition to the shed roll if that were substituted for one; the two diamond twills (Plates 6 C, 7 A) would require thirty-two pattern sticks if they were all placed in their positions at one time. I believe a more practical method would be to insert four pattern sticks in proper sequence to raise the required warps for weaving the first half of the diamonds, and to repeat that sequence four times. That would bring the weaving to the mid-point of the motive. For the final half, four sticks would need to be inserted to raise a new series of warp groups. This sequence would be repeated four times. Whichever plan was followed, the weft element had to be put across the web through openings prepared by raising certain warp threads.

Weaving with the aid of pattern sticks is also to be classed with the finger methods since each stick must be separately placed in its position. The procedure is as follows: the weaver begins with the sticks in place. First, she pulls forward the one nearest her and turns it on edge to open its special shed. Second, after the weft element is passed through from side to side, the stick is removed and re-inserted under and over its special warps beyond the last stick in the pattern, the one farthest away from the working edge. Stick 2 is pulled forward and the same procedures are followed. A loom in the Bankfield (England) Museum described by Ling Roth[5] has "twelve pattern laze threads interlaced in the warp." Roth thinks it probable that "as the weaving progressed, the pattern laze threads nearest the web, and therefore done with, would be removed, and if necessary re-inserted above the others" for a new arrangement. Crawford speaks of "short pieces of cane" being used to secure the shed most often required in the same design. He reports that "a large number of these pieces of cane are found in the graves, sometimes even in looms containing unfinished webs."[6]

The thread count of the ancient twills is a feature which argues against their being finger-woven materials. The breadth of most Peruvian cloths falls between 16 and 27 inches. If, for the sake of illustration, we assume 20 warps per inch of web, that would mean a total of 400 warps within a 20-inch width; and if finger-weaving were the procedure followed, the weaver would have to segregate the warps to be lifted from that number prior to each passage of the weft yarn

5 Roth, H. Ling, *Studies in Primitive Looms* (Bankfield Museum Notes, Second series, vol. 8, Halifax, 1918), pp. 22, 23, fig. 40.

6 M. D. C. Crawford, *Peruvian Textiles* (Anthropological Papers, American Museum of Natural History, vol. 12, part 3, 1915), p. 86.

across the breadth. The incredibility that any people who were able to produce cloth of the quality found in the graves would produce it under such a handicap becomes greater upon consideration of the actual warp-weft counts of the several Mochica twills. In their order from coarsest to finest, the warp units per inch are as follows: 40 pairs, 48 single warps and 48 pairs, 56 single warps (in three specimens), 60 single warps, 72 single warps. Handling these numbers of warps per inch would in itself be laborious, but the weft counts range from 24 single wefts through 44 pairs of wefts. These counts tell how many times per inch the groups of warps forming the pattern motive or the continuous twill would have to be raised for the passage of the bobbin. The combined warps and wefts per square inch are given in Table 1. Based on the number of individual yarns per inch of weaving whether or not used singly, the warp counts for all the twill group range from 24 to 96 and the wefts from 12 to 88.

In terms of sewing threads with which we are familiar, the weaving yarns of the specimen in Plate 5 A,B are approximately the size of Coats' 90 and 100 white cotton; the coarser yarns of the diamond twill (Plate 6 C,D) correspond to Coats' 60 and the finer ones to 90 and 100; and the cordlike yarns in Plate 4 C,D have diameters roughly comparable to Coats' 36 and 50. The yarns in most of the other specimens are coarser, similar to the carpet warps.

Method 3—By equipping the backstrap loom with two supplementary heddles. These in addition to the regular heddle and the shed roll change it to a four-heddle loom. The arrangement has very obvious advantages over the other two possibilities, one of them being the shorter time consumed in actual weaving. The initial hours (probably) and effort expended in rigging two more heddles for a twill weave would be cancelled out many times over by the simplified weaving procedure.

Joyce describes a second loom with an unfinished piece of double-cloth still in place on it.[7] This specimen forms part of a collection of textiles and other objects from burial grounds in the Departments of Lambayeque, La Libertad, and Ancachs. There are two heddles and one of the two (presumably) shed rolls in position. Double-cloth weaving would almost certainly have been done with the aid of multiple shedding devices, but these need not have awaited development by Middle-period weavers. Very complicated motives were attempted and accomplished with surprising success by the Paracas Caverns weavers of an earlier period.[8]

7 T. A. Joyce, *Note on a Peruvian Loom of the Chimu Period* (Man, January 1922, pp. 1-2).

8 O'Neale, *Textile Periods in Ancient Peru: II, Paracas Caverns and the Grand Necropolis*, figs. 2, 3.

At Pariahuanca, an Andean village in the montaña northeast of Huancayo, I found that present-day belt weavers equip their looms with three heddle rods and a slender crotch-shaped stick with a double function: it maintains the original order of the warps in a cross between its forks, and it serves as a shed roll (Plate 9). By turning the near fork of the crotch upward the weaver can raise all the warps passing over it. Thus it becomes the equivalent of a fourth heddle. The shedding possibilities more than double those of the regular backstrap loom if the weaver takes advantage of permutations, and raises two heddles at a time. With the exception of the figure weaving in the Ate shirts (cf. Plate 8 A-C) nothing makes that procedure appear necessary, but the potentiality may furnish a reasonable explanation for some of the warp-pattern weaves of the later periods. For example, the two supplementary heddles on the Pariahuanca loom brings up additional groups of warps from which choices may be made. There is still finger manipulation to do in selecting warps for the pattern units, but the larger groups are segregated.

The Late Ancon textile (Plate 6 A) with herringbone border calling for controls over four groups of warps is also an example of pattern weaving on the same general principle as that in the Pariahuanca belts.

TWILL TECHNIQUES

Procedures on a Multiple-Heddle Loom

In this section I am assuming that the Mochica and other ancient weavers added one heddle or comparable device to their looms to make possible the control of three divisions of the warp for the three-thread twills (Ate 2618, Poroma 171362e), and that they added two heddles or comparable devices to place under control four divisions of the warp for the four-thread twills.

We cannot know from the fabrics how the Peruvians allocated warps to the several heddle devices, possibly employing the shed roll as one, but the Pariahuanca loom furnishes interesting suggestions. The simple procedure followed by the present-day weavers in that locality has also the practical advantage of being easily checked experimentally for accuracy by the analyst. The warps on the loom in Plate 9 are in pairs. The odd-numbered pairs pass under the distal prong of the forked stick combining the functions of lease stick and shed roll and over the proximal prong. The even-numbered pairs pass over the distal and under the proximal prong. These even-numbered pairs are picked up to encircle in the loops of Heddle 3. Heddles 2 and 1 follow in that order with Heddle 1 nearest the weaver. Between them they redivide the total number of warps into new pairs. The loops on Heddle 2 encircle the right-hand odd-numbered warp

of each pair coming over the proximal prong and the left-hand even-numbered warp of each pair held in the loops of Heddle 3; Heddle 1 encircles the "opposites:" the right-hand even-numbered warp and the left-hand odd-numbered warp.

The completed setup is according to the following diagram in which "o" and "E" designate the odd- and even-numbered warps respectively:

```
Warp threads:  ooEEooEEooEEooEEooEEooEEooEEooEEooEEooEEooEEooEEooEEoo

Shed roll    : oo  oo  oo  oo  oo  oo  oo  oo  oo  oo  oo  oo  oo  oo

Heddle 3     :   EE  EE  EE  EE  EE  EE  EE  EE  EE  EE  EE  EE  EE

Heddle 2     :  oE  oE  oE  oE  oE  oE  oE  oE  oE  oE  oE  oE  oE  o

Heddle 1     : o  Eo  Eo  Eo  Eo  Eo  Eo  Eo  Eo  Eo  Eo  Eo  Eo  Eo
```

From the standpoint of pattern possibilities, the most important feature of the Pariahuanca setup is the arrangement by which each warp thread can be lifted by two different heddles or by one heddle and the shed roll. This plan is workable because the loops pendent from heddle rods on the ordinary backstrap loom may be from three to four inches long. That length permits either of the twin warps passing through it to be freely raised by a second loop pendent from another heddle rod.

Methods for continuous twills—The Peruvian continuous twills that I have analyzed classify as three-thread and four-thread twills. The first has a repeated warp unit consisting of three warps, and three lines of weft complete its pattern. The second has four warps and four lines of weft in each unit. The best example of the three-thread twill in the collection is an Ate shirt (2618) with allover pattern of birds and reciprocal hooks identical to that shown for Ate 2435 (Fig. 7) except for scale.

The four-thread twill has additional possibilities. The warp unit may be divided unevenly to throw one warp or three warps to the surface. Two Ate shirts have narrow crossbands in the one-up, three-down form, and the effectiveness of the background in one of them (Plate 8 A-C) is partly the result of the choice. The combination of white warps and brown wefts emphasizes the length of the floats. The even twill on four threads is a third possibility. If we include the fragment in which the warps are in pairs, all five continuous twills in the Early-period group are woven two-up, two-down (Plates 4 A,B, 4 C-E, 7 B,C, and specimen 4-3097b).

Continuous twills like those illustrated can be woven on backstrap looms set up according to the diagram for the Pariahuanca method by repeating the following sequence: (1) raise Heddle 1, put weft across; (2) draw forward the shed roll, put weft across; (3) raise Heddle 2, put weft across; (4) raise Heddle 3, put weft across. The twill wale is apparent from the diagram below, which reads upward. Since this is an even twill, the weft which crosses the spaces is as prominent as are the warps.

Warp threads:	oo	Eo	oo	Eo	oo	Eo	oo	Eo	oo	Eo	oo	Eo	oo	Eo	oo	Eo	oo	Eo	oo	Eo	oo	Eo	oo	Eo	oo	E
Heddle 3 :		EE		EE		EE		EE		EE		EE		EE		EE		EE		EE		EE		EE		
Heddle 2 :		oE		oE		oE		oE		oE		oE		oE		oE		oE		oE		oE		oE		
Shed roll :	oo		oo		oo		oo		oo		oo		oo		oo		oo		oo		oo		oo		oo	
Heddle 1 :	o	Eo		Eo		Eo		Eo		Eo		Eo		Eo		Eo		Eo		Eo		Eo		Eo		E

The continuous twill in Plate 7 B,C is woven with groups of four warps making the unit. It may be represented in the same way to show that each pair of warps is lifted by two different heddles, or by one heddle and the shed roll. In practice, four warps encircled by a single heddle loop might give the weaver some difficulty, especially when she lifted two of them from the group. The fragment is so small that any discrepancies of weave cannot be checked. The diagram for this twill at the top of page 282 also reads upward.

For clarity, I shall designate the shed roll as number 4 in the diagrams to follow. Digits 1, 2, and 3 will represent the heddles which raise the one or several warp threads as a unit necessary to the pattern. Two digits, for example 33, indicate that a pair of warp threads were raised simultaneously; three digits, 333, indicate that a trio of warps were raised. Numbers substituted for letters in Diagrams 1 and 2 show the twill diagonal and also the sequence in which the warps were drawn up by heddle devices in order to produce the two-and-two and the four-and-four twills. The pattern unit is enclosed by lines; four passages of the weft complete the sequence which thereafter is repeated without variation.

The reconstruction in string which I have made to test the accuracy of the analyses and the manipulation of loom parts have also proved the practicability of the Pariahuanca method of subdividing the warps for weaving twills. I know of no present evidence to support my assumption that even the Mochica twills are fragments of garment materials or that they were fairly important

```
Warp threads: ooooEEEEooooEEEEooooEEEEooooEEEEooooEEEEooooEEEEoooo

Heddle 3    :     EEEE    EEEE    EEEE    EEEE    EEEE    EEEE

Heddle 2    :   ooEE    ooEE    ooEE    ooEE    ooEE    ooEE    oo

Shed roll   : oooo    oooo    oooo    oooo    oooo    oooo    oooo

Heddle 1    : oo    EEoo    EEoo    EEoo    EEoo    EEoo    EE
```

sections of garments woven in twill technique and not simply minor decorative details. Some of the present-day Guatemalan weavers introduce crossbands of twill.[9] A woman rigs her loom with one supplementary heddle and then manipu-

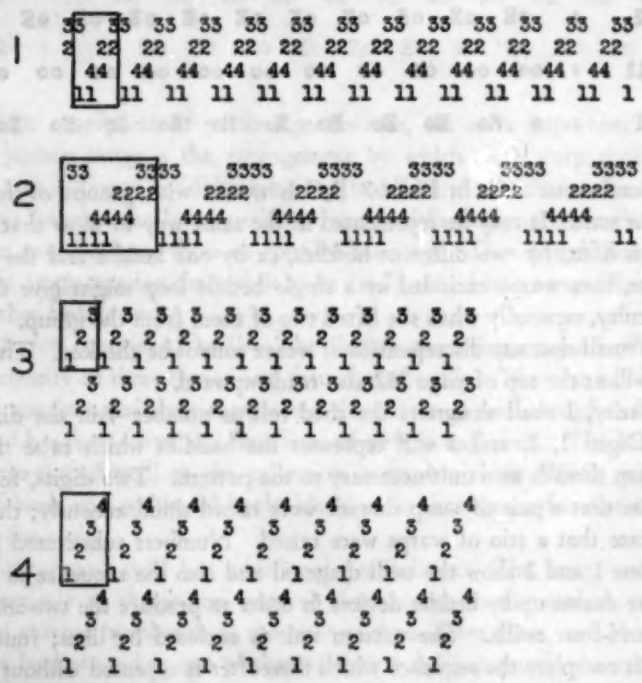
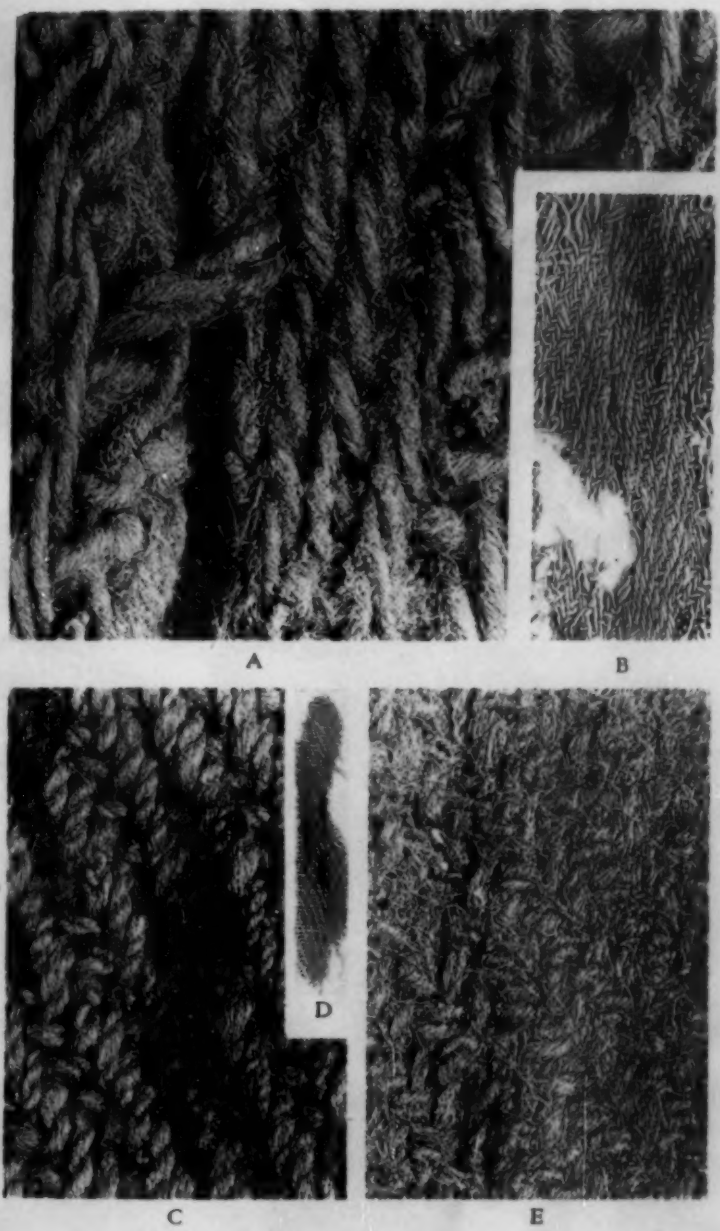


FIG. 2. Diagrams of allover continuous twills. 1: Unit, 4 warps (in pairs) by 4 wefts; 2: 8 warps (in pairs) by 8 wefts; 3: 3 warps by 3 wefts; 4: 4 warps by 4 wefts. Allocation of warps to Heddle Devices 1, 2, 3, 4 show each warp lifted by either of two devices in 1, each warp pair by either of two devices in 2, each warp by a single device in 3 and 4.

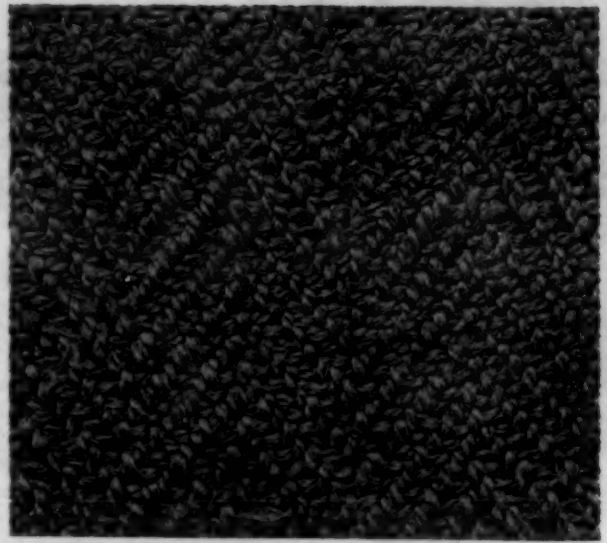
9 L. M. O'Neale, *Textiles of Highland Guatemala* (Publication, Carnegie Institution of Washington, no. 567, 1945), pp. 33, 34, 70, 71.



MOCHICA CONTINUOUS TWO-AND TWO TWILLS
(A, × 8; B, × 0.8; C, × 7.5; D, × 0.75; E, paired wefts, × 7.5)

A

B



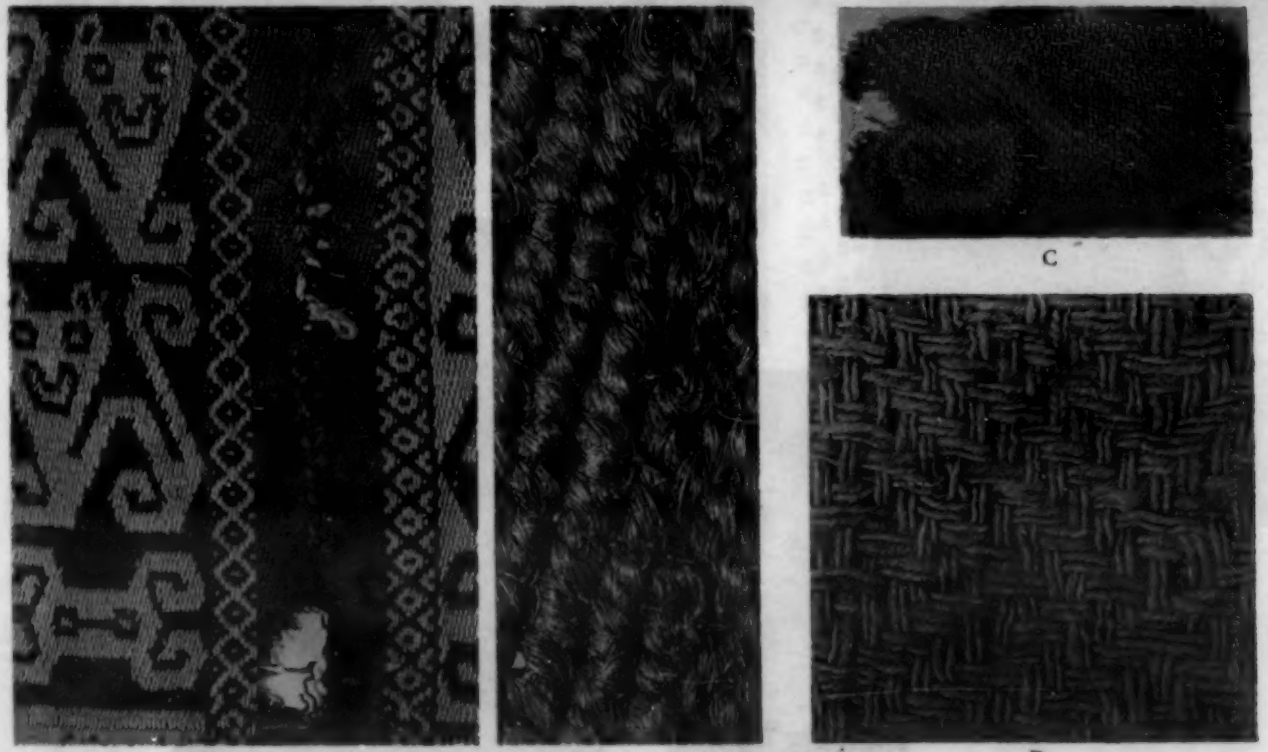
C

D

Reversed Twills

A, B, Mochica reversed twill, pointed herringbone type; side selvage; paired wefts (A, × 0.7; B, × 7); C, Middle-period wool material woven reversed twill, broken type (× 2); D, Middle-period cotton material, reversed twill, broken type; wool tapestry border (× 0.7)

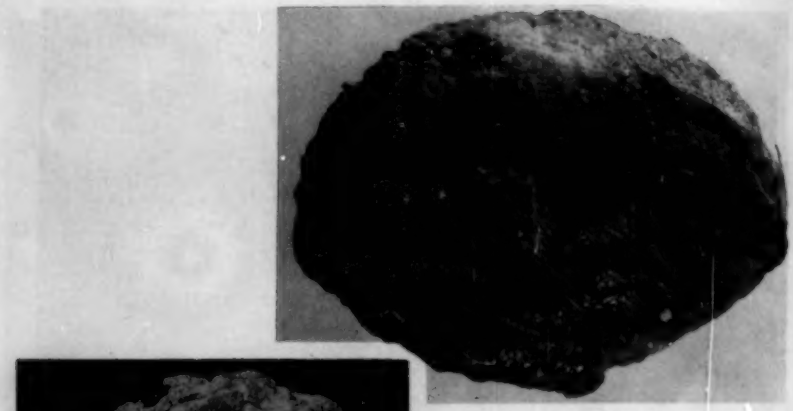
A, B, Mochica reversed twill, pointed herringbone type; side selvage; paired wefts (A, × 0.7; B, × 7); C, Middle-period wool material woven reversed twill, broken type (× 2); D, Middle-period cotton material, reversed twill, broken type; wool tapestry border (× 0.7)



A B C D

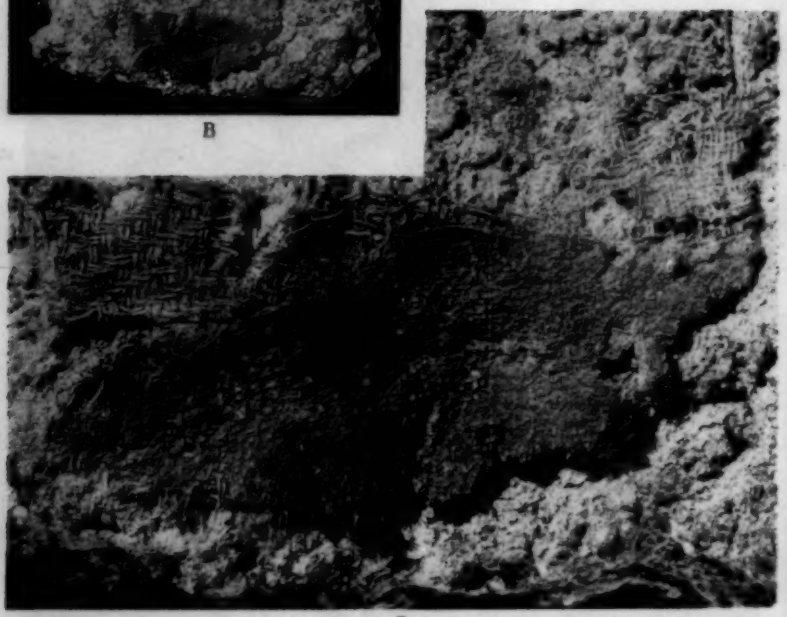
HERRINGBONE AND PATTERN TWILLS

A, B, Late-period pattern weave in wool, twill side border, herringbone type (A, × 0.6; B, × 6); C, D, Mochica cotton fragment, reversed twill, pointed herringbone type; forms diamond pattern; paired weaving elements (C, × 1; D, × 5)



A

B



C

MOCHICA COPPER SLUGS, TEXTILES ADHERING

A, Reversed twill, broken type; forms diamond pattern (× 0.7); B, C, Four-and-four continuous twill (B, × 0.7; C, enlarged detail of B, × 3.5)

lates small sticks to depress one or the other half of the warps under the control of the regular heddle. The procedure is awkward and seems understandable only in the light of the relatively small sections of twill attempted. Since the Early-period cloths surpass in terms of technical proficiency most of the weavings produced by today's weavers on backstrap looms, it does not seem unwarranted to credit the Peruvians with the use of multiple-heddle devices.

The one-and-two three-thread twills (Ate 2618) and the one-and-three four-thread twills (Ate 2435, Plate 8 A-C) do not necessitate encircling each warp by heddle loops from two different rods. Individual warps of the repeat unit are

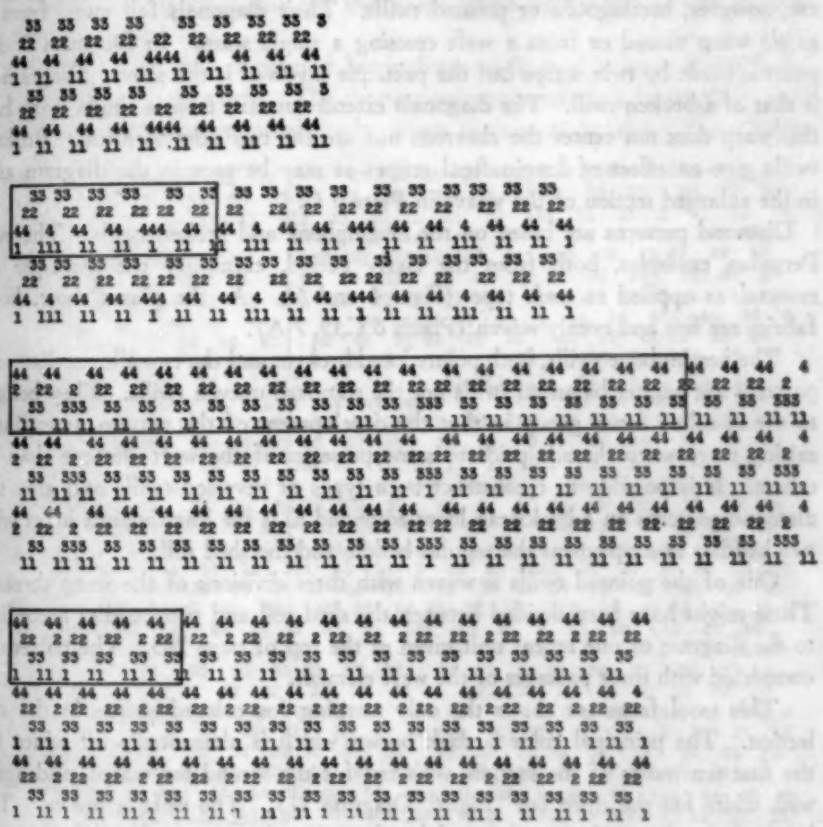


Fig. 3. Diagrams of allover reversed twills. 5: Pointed-herringbone type; unit, 36 warps by 4 wefts; 6: Pointed herringbone type; unit, 24 warps by 4 wefts; 7: Pointed herringbone type; unit, 82 warps by 4 wefts; 8: Broken type; unit, 20 warps by 4 wefts. Allocation of warps to Heddle Devices 1, 2, 3, 4 shows each warp lifted by either of two devices.

encircled separately: Warp 1 by a loop from Heddle 1, Warp 2—and Warp 3 of the four-thread twill—by loops from their respective heddles. In both instances, the shed rolls can be drawn forward to raise the last warp of the repeat. The allover continuous twills produced by repeating the changes effected by Heddles 1, 2, and the shed roll, and by Heddles 1, 2, 3, and the shed roll for the three-thread and four-thread twills respectively, are shown in Figure 2, Diagrams 3 and 4. The pattern units are enclosed by lines.

Methods for reversed twills—At first glance, the diagrammatic representations of the reversed twills in Figure 3, Diagrams 5-8 are alike. The first three are, however, herringbone or pointed twills. Their diagonals fall away from a single warp thread or from a weft crossing a single warp. In Diagram 5 the point is made by twin warps but the principle involved is the same. Diagram 8 is that of a broken twill. The diagonals extend outward from a single warp but this warp does not center the chevrons nor are the two sides identical. Broken twills give an effect of longitudinal stripes as may be seen in the diagram and in the enlarged section of the weave in Plate 5 C.

Diamond patterns are based on the herringbone and broken twills. The two Peruvian examples, both from the Early period, exemplify the principle of reversal as applied to each type (Figs. 4 and 5). As the plates show, both fabrics are fine and evenly woven (Plates 6 C,D, 7 A).

The herringbone twills, both pointed and broken, and the two allover diamond patterns are neither balanced twills nor the standard uneven twills. They belong to the so-called fancy group in that the development of the pattern necessitates raising more warp threads prior to some passages of the weft element than to others. It is possible to reconstruct both types of reversed twills and also the diamond patterns on a backstrap loom equipped as is the Pariahuanca loom with two heddles to supplement the regular heddle and the shed roll.

One of the pointed twills is woven with three divisions of the warp threads. These might have been divided between the shed roll and two heddles according to the diagram of one repeat unit given at the top of page 285. The pattern is completed with three passages of the weft element.

This wool fragment shows the only warping for colored stripes in the collection. The principal color is dark brown which is alternated with white for the first ten warps of the section, with red for the second ten warps, and again with white for the third ten (Fig. 6, Diagram 11). The weft is brown. The herringbone diagonals are obscured by the color changes much as they are in the text figure.

In the remaining herringbone and diamond twills there are two sets of "oppo-

Shed roll: 3 333 33 33 333 33 3

Heddle 2 : 22 22 22 22 2 22 22

Heddle 1 : 11 1 11 11 11 11 11

sites" just as there are in the four-thread continuous twills. For comparison with them, I have indicated the two sets on the diagrams by the same numbers: the warp threads lifted by drawing forward the shed roll (designated as 4) and lifting Heddle 3 to make one set; the warps lifted by Heddles 2 and 1 make the second.

There are four true or pointed herringbone twills in this lot and two based on a setup for a broken twill. The shortest unit repeated for a herringbone twill comprises 24 warps, some raised singly, others in pairs or in trios. Two Cañete

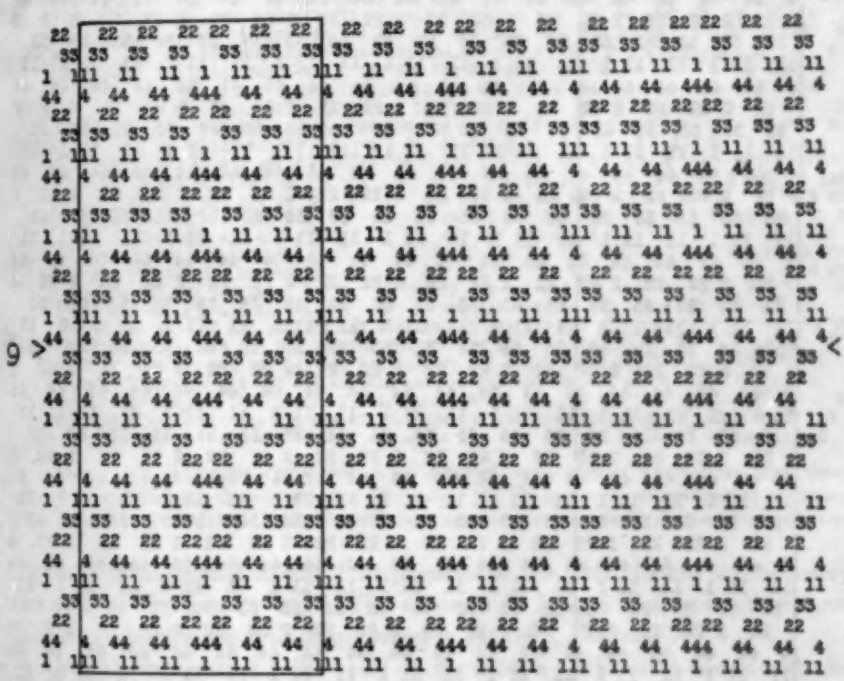


FIG. 4. Diagram of diamond-pattern twill based on pointed reversed type. 9: Unit, 24 warps by 32 wefts. Allocation of warps to Heddle Devices 1, 2, 3, 4 shows each warp lifted by either of two devices.

twills, very much alike in appearance, were woven according to the diagrammatic representation in Figure 3, Diagram 6. Four lines of weft complete the pattern unit shown enclosed. The allover is produced by repeating the sequences 1, 4, 2, 3 indefinitely.

A repeat unit comprising 36 warps forms the edge stripes on two breadths of wool material joined by stitchery (Plate 6 A). In this collection there is no other such border nor any other abbreviated herringbone. The complete warp unit is diagrammed in Figure 3, Diagram 5; four lines of weft make the pattern which is repeated without change on one breadth, but which is reversed on the right-hand breadth. This reversal will be mentioned in connection with the diamond patterns.

A Mochica herringbone twill (Plate 5 A,B) involves the greatest number of warps in its repeat unit of any in the group. There are 82 single warps in

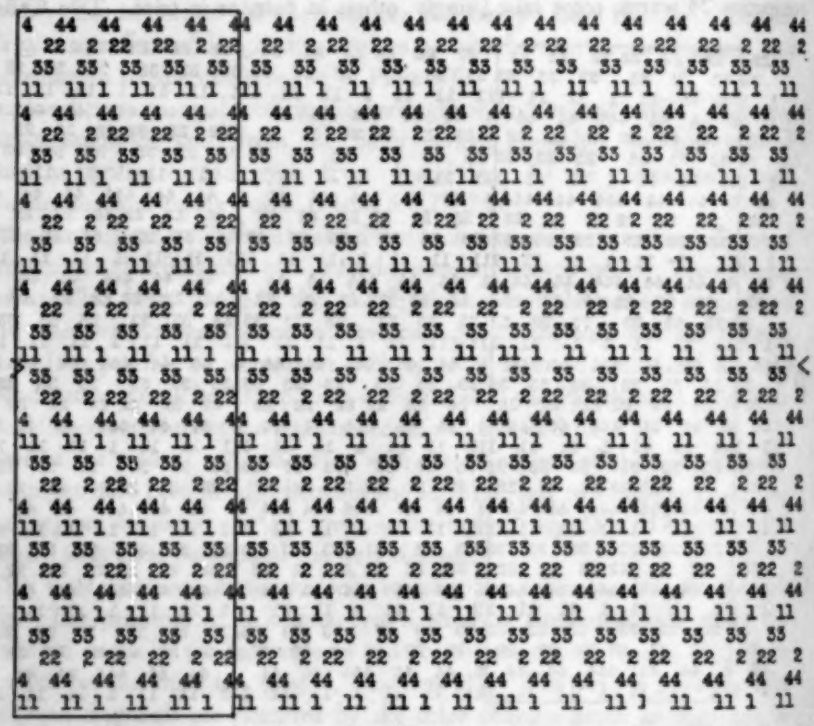
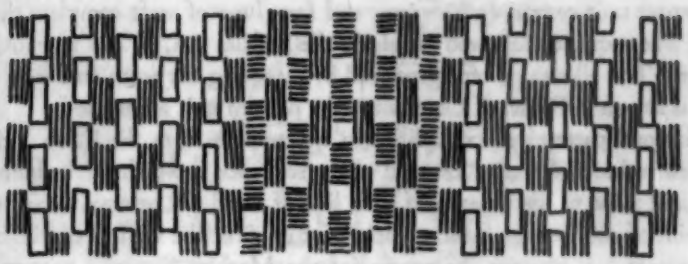


Fig. 5. Diagram of diamond-pattern twill based on broken reversed type. 10: Unit, 20 warps by 32 wefts. Allocation of warps to Heddle Devices 1, 2, 3, 4 shows each warp lifted by either of two devices.

11



12

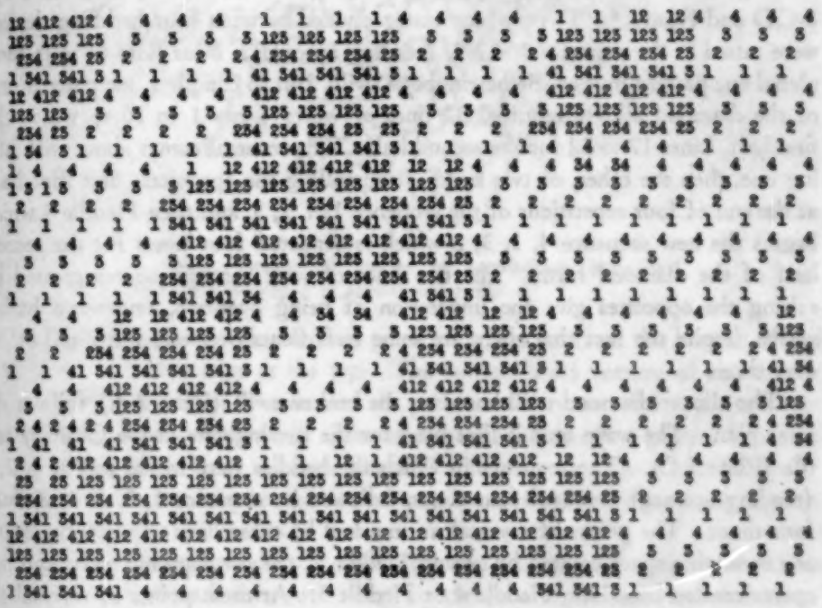


FIG. 6. 11: Schematic representation of reversed twill, pointed-herringbone type shows color sequence in warp threads obscures diagonals. 12: Diagrammatic representation of incomplete pattern motive: ground twill, one-and-three variation; pattern twill, three-and-on variation.

various combinations but only four passages of the weft element are necessary to complete the pattern unit. The sequence 1, 3, 2, 4 was repeated without change to produce the twill diagrammed in Figure 3, Diagram 7.

Both of the reversed twills based on the broken twill can be woven with the same groupings of warps. The very fragile Chancay textile, a portion of which is shown enlarged in Plate 5 C, is of wool; the Aramburu fragment (Plate 5 D) is cotton with tapestry border almost equal in width to the preserved twill section.

The repeat unit comprises 20 warps, and four lines of weft complete the pattern unit. The sequence followed in raising the heddles is 1, 3, 2, 4 repeated without change. The allover pattern produced by repeating the warp and weft orders as given is shown in Figure 3, Diagram 8; the pattern unit is enclosed.

Diamond patterns as exemplified in two textiles from the Early period bring in a new technical feature: reversal of the sequence in which the heddling devices are raised prior to the passage of each line of weft, the reversal occurring at the midpoint of the lozenge form. The repeat unit for the Cañete herringbone twill in Diagram 6 is likewise the repeat for the Mochica diamond pattern in Plate 6 C,D and Figure 4. Twenty-four warps divided between four heddling devices were raised in the sequence 1, 4,2 3, (reading upward). Four lines of weft completed one pattern unit of the herringbone twill. But to complete one pattern unit of the diamond allover required 32 lines of weft: Lines 1 to 16 to weave the first half, Lines 17 to 32 for the second half. The reversal comes about with lifting one, then the other, of two heddles controlling the opposites; first Heddle 3 at the end of four repetitions of the sequence 1, 4, 2, 3, and then Heddle 4 which begins the new sequence 4, 1, 3, 2 which is repeated four times for the second half of the diamond form. The two lines of weft through spaces created by raising the opposites give the impression of being over-two, under-two basket weave despite the fact that there are some weft floats over one warp and others over three.

The allover diamond twill based on the broken twill (Plate 7 A) follows the same plan. The warp unit is that used for the herringbone in the Chancay textile (Plate 5 C). The sequence in which the heddles were raised was 1, 4, 2, 3 (reading upward) repeated four times, followed by sequence 1, 3, 2, 4 repeated four times. The points of reversal are marked by three lines of weft, the center one through a space created by raising Heddle 1, the two flanking wefts through spaces created by raising Heddle 4 or Heddle 3. At these points of reversal the sequence reads 4, 1, 4 or 3, 1, 3, alternately.

In one spot in the border of the Ancon twill (Plate 6 A), the heddling is reversed as if to begin a diamond pattern. Because the border is only 36 warps wide, all that develops is a series of chevrons diverging upward and downward from a line of weft. This reversal may represent an error in weaving which followed upon raising Heddles 1 and 2 (the opposites) in sequence instead of continuing the 1-4-2-3 sequence.

Methods for figured twills—All three of this type in the collection come from Ate. A fragment of one illustrated on Plate 8 A-C and diagrammed in Figure 6, Diagram 12 is from a cotton shirt. The patterned portion has an incomplete

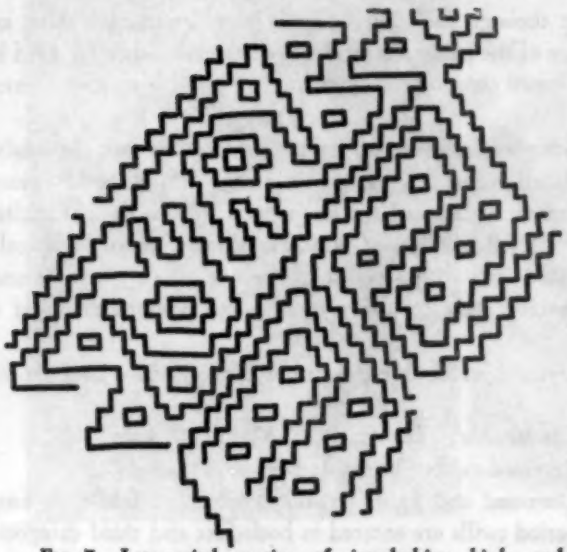


FIG. 7. Late-period motive of interlocking birds and latch-hooks developed in four-thread twill.

depth of 10 inches, extending from a point 16 inches up from the bottom of the fragment to the torn edge at the top. The extraordinary feature of this cotton damask from a primitive loom is that the pattern twill runs in the opposite direction to that of the ground twill. The same holds for the deep pattern bands in the other two shirts from the same site. The band on specimen 2435 (Fig. 7) extends from a point 9 inches up on the garment to the torn edge at the top, an incomplete depth of 22 inches.

These ambitious patternings in twill technique employ both choices offered by the uneven four-thread unit: one warp on the face of the material and three covered by the weft float is the repeated unit for the background; three warps on the face and one covered by the weft float is the pattern form.

The possibilities as to procedure in weaving this twill, which is similar to our own damasks, are two, as I see them: (1) The Ate weavers may have allocated their warps to four heddling devices, Heddle 1 to raise Warps 1, 5, 9, etc., Heddle 2 to raise Warps 2, 6, 10, etc., Heddle 3 to raise Warps 3, 7, 11, etc., and Heddle 4 to raise Warps 4, 8, 12, etc. This is the allocation for the plain one-and-three twills already mentioned (Fig. 2, Diagram 4). The patterned portions, with those aids in marking the divisions of warps, might be developed by finger weaving. (2) The weavers may have divided their warps as just

indicated, put through each line of weft by raising one heddle, say Heddle 1, and at the edge of the pattern motive, raised the two other required heddles. The warp threads raised simultaneously include all possible combinations: 1-2-3, 2-3-4, 3-4-1, 4-1-2.

In attempting explanations of techniques like this last, the analyst must keep in mind that in all probability the weaving was accomplished by practical methods and that the manipulations of the loom parts to achieve the results were known to many workers. Regardless of our astonishment at the technical performance of the Peruvians, it is within reason to believe that experience and an unusual proficiency enabled them to weave rapidly and without many of the envisaged difficulties.

The occurrences of twill types in the three periods may be summarized as follows:

1 Continuous twills: Early, 5; Middle, 0; Late, 3
2 Reversed twills: Early, 1; Middle, 4; Late, 2
3 Diamond and figured twills: Early, 2; Middle, 0; Late, 3

Three Late-period twills are entered in both first and third categories.

ABSTRACTS OF ANALYTICAL DESCRIPTIONS

The main points in the technical analyses forming the basis of this study are summarized in the following paragraphs.

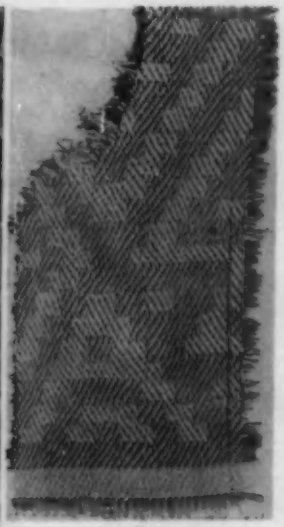
Early-Period Twills

Mochica 4-3089b (grave 16). Largest of five fragments, one inch square; one side selvage, no loomstring end. Natural (?) brown cotton weaving elements. Two-and-two continuous twill weave; wale angle approximately 55 degrees. Thread count per inch, 56 warps by 40 (×2) wefts. Warp yarns: two-ply hard Z-twist, each single a hard S-twist; weft yarns: single-ply hard S-twist. Strongly accented wales partly the result of paired wefts (Plate 4E; Diagram 1).

Mochica 4-3097b (grave 17). Largest of six fragments, 3 inches by 5½ inches; no preserved selvages. Natural (?) brown cotton weaving elements. Two-and-two continuous twill weave; wale angle approximately 55 degrees. Thread count per inch, 60 warps by 36 (×2) wefts. Warp yarns: two-ply hard Z-twist, each single a hard S-twist; weft yarns: single-ply hard S-twist. Strongly accented wales partly the result of paired wefts (Diagram 1).

Mochica 4-3097c (grave 17). One fragment 2 inches by 1½ inches; one side selvage, no loomstring end. Natural brown (?) cotton weaving elements. Herringbone twill in the main two-and-two interlacing; wale angle approximately 65 degrees. Thread count per inch, 56 warps by 32 (×2) wefts. Warp yarns: two-ply hard Z-twist, each single a hard S-twist; weft yarns: single-ply hard S-twist. Strongly accented wales partly the result of paired wefts, and partly the result of the twill

A

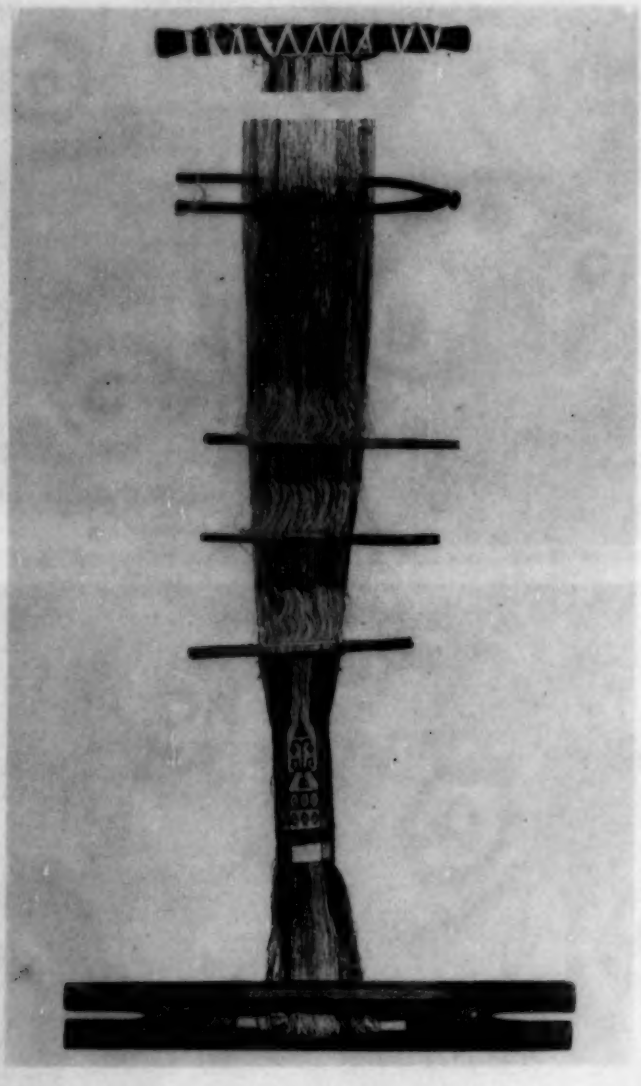


B

C

LATE-PERIOD FRAGMENT OF FIGURED COTTON TWILL

Incomplete pattern unit; white warps, brown wefts: a fragment, 4½ by 2¼ inches (A, C, enlarged sections, × 3; B, × 0.6)



MULTIPLE-HEDDLE BELT LOOM
from Andean village of Pariahuanca

angle of one diagonal of the zigzag running counter to the direction of the yarn twist (Plate 5 A, B, Diagram 7).

Mochica 4-3097d (grave 17). Largest of six fragments, 4 inches by 2 inches, consisting of two pieces seamed with widely spaced whipping stitches; two side selvages, no loomstring end. Natural white cotton weaving elements. Two-and-two continuous twill weave; wale angle approximately 65 degrees. Thread count per inch, 48 warps by 24 wefts. Warp yarns: single-ply hard-to-crepe S-twist; weft yarns: single-ply crepe S-twist. Unusual to find weft yarns more tighty twisted than warps; spinning of both elements is uneven, a crepe-twisted section of yarn frequently follows a slack-twisted section. Wale accented by length of warp floats as indicated by the difference in count between warps and wefts, and also by the size of the yarns (Plate 4 A, B, Diagram 1).

Mochica 4-3097e (grave 17). One fragment, 2 inches by ⅜ inch; no preserved selvages. Natural white cotton weaving elements. Two-and-two continuous twill weave; wale angle approximately 55 degrees. Thread count per inch, 56 warps by 40 wefts. Warp yarns: two-ply hard Z-twist, each single a hard S-twist; weft yarns: ditto. Strongly accented wales partly the result of the cordlike double-ply yarns in each system (Plate 4 C, D, Diagram 1).

Mochica 4-3097f (grave 17). Single fragment 1¼ inches by 2¼ inches; no preserved selvages. Natural white cotton weaving elements. Allover diamond of damask variety; wale angle approximately 45 degrees. Thread count per inch, 40 (× 2) warps by 44 (× 2) wefts. Warp yarns: single-ply hard-to-crepe S-twist; weft yarns: ditto. Pattern clearly visible (Plate 6 C,D, Diagram 6, Fig. 4).

Mochica 4-3191a (grave 26). Fragment held to incrustation on large oval copper slug from hand of skeleton; no visible fabric edges. Natural brown (?) weaving elements. Allover diamond pattern of damask variety; wale angle approximately 65 degrees. Thread count per inch, approximately 72 warps by 40 (× 2) wefts. Warp yarns: two-ply hard Z-twist; weft yarns: single-ply crepe S-twist. Pattern clearly visible (Plate 7 A, Diagram 8, Fig. 5).

Mochica 4-3292 (grave 26). One fragment 1 inch by ¼ inch; one side selvage, no loomstring end. Natural white cotton weaving elements; four-and-four continuous twill weave; wale angle approximately 45 degrees. Thread count per inch, 48 (× 2) warps by 44 (× 2) wefts. Warp yarns: single-ply hard S-twist; weft yarns: ditto (Plate 7 B,C, Diagram 2).

Middle-Period Twills

Chancay 4-7008a-c (Site E). Fragmentary and disintegrating garment material, 32 by 18 inches; one side selvage preserved in part; other side shows intact weft loops in places, no loomstring end. Reddish brown wool weaving yarns. Allover herringbone twill in the main two-and-two interlacing; wale angle approximately 50 degrees. Thread count per inch, 30 warps by 26 wefts. Warp yarns: two-ply slack-to-medium S-twist, each single, Z-twist; weft yarns: ditto (Plate 5 C, Diagram 8).

Aramburu, Lima 169415a,b (grave P1-105, "Early" Lima). Fragment approximately 4 by 8 inches; no preserved selvages. Warps, stained white cotton; wefts, ditto in twill section, dyed wool in tapestry section. Allover herringbone twill, in the

main two-and-two interlacing; wale angle approximately 45 degrees. Thread count per inch, 34 warps by 32 wefts. Warp yarns: two-ply hard Z-twist, each single, S-twist; weft yarns: ditto (Plate 5 D, Diagram 8).

Cerro del Oro, Cañete 169678a (grave A12, Middle Cañete). Fragment of garment material 9 by 19 inches; two side selvages, two heavy loomstrings of light wool yarn at one end. Natural (?) dark brown and dyed wool weaving elements. Herringbone twill, in the main two-and-two interlacing; wale angle approximately 55 degrees. Thread count per inch, 24 warps by 16 wefts. Warp yarns: two-ply medium twist; weft: ditto. Design and color: on side edges, uneven-width stripes of two colors, consisting of 4 yellow, 4 brownish-red, 4 yellow, 10 red yarns. Herringbone section 2½ inches deep forming border to plain-weave section (Diagram 6).

Cerro del Oro, Cañete 169678b (grave A12, Middle Cañete). Fragment of garment material 22 by 19 inches; two side selvages, no loomstring end. Differs from specimen 169678a only in design: 169678b is allover herringbone twill (cf. Diagram 6).

Late- or Inca-Period Twills

Ancon 16-967. Fragment of garment material 8½ by 4½ inches consisting of parts of two webs; intact side selvages drawn together with saddler's-stitch seam; one loomstring end. Dyed dark brown, natural golden brown and buff wool weaving elements. Herringbone twill in half-inch stripes on either side of seam; wale angle approximately 75 degrees. Other weaves, plain and double-face pattern. Thread count per inch, 56 warps by 12 wefts. Warp yarns: two-ply hard S-twist, each single Z-twist; weft, ditto and also single-ply hard Z-twist yarns. Twill wales strongly accented as result of hard twist in weaving yarns; motives in pattern weave, stylized cat figures and linked lozenge units (Plate 6 A, B, Diagram 5).

Poroma, Nazca 171362e (grave 1001). Fragment 6 by 2½ inches; no side selvages, one loomstring edge strengthened by whipping stitches. White and dyed wool weaving elements. Herringbone twill, in the main two-and-two interlacing; wale angle approximately 70 degrees. Thread count per inch, 88 warps by 30 wefts. Warp yarns: two-ply medium-to-hard twist; weft yarns: two-ply slack twists. Design and color: warp stripes alternating dark brown and white in side sections of herringbone, dark brown and red in center section (Fig. 6, Diagram 12).

Ate, Lima 2618. Fragment of shirt 10 by 18 inches consisting of parts of two webs; intact side selvages seamed together, no loomstrings. White and natural brown cotton weaving elements. Continuous twill, one-and-two interlacing in crossbands, also pattern in twill; wale angle approximately 45 degrees. Other weave: plain. Thread count per inch, 48 warps by 48 wefts. Warp yarns: two-ply hard S-twist, each single hard Z-twist; weft yarns: ditto. Design and color: bottom of shirt white; crossbands in continuous twill border a section in allover pattern twilling of damask variety; wefts for bands and allover, brown. Motives: countered birds, interlocking hooks, small geometric forms (cf. Plate 8 A-C; Diagram 3, Fig. 7).

Ate, Lima 2435. Fragment of shirt 31 by 11 inches; no preserved selvages. White and natural brown. Continuous twill, one-and-three interlacing in crossbands, also pattern in twill; wale angle approximately 55 degrees. Other weave: plain, warp

face. Thread count per inch, 58 warps by 38 wefts. Warp yarns: two-ply hard S-twist, each single hard Z-twist; weft yarns: ditto. Design and color: bottom of shirt white. At point 9 inches up on the fragment, crossbands in continuous twill weave ¼ inch wide border section in allover pattern twilling of damask variety; wefts for bands and allover, brown. Motives: birds and interlocking hooks (cf. Plate 8 A-C, Diagram 4, Fig. 7).

Ate, Lima 2464. Fragment of shirt 26 by 10 inches; no side selvages, one loomstring end. White and natural brown cotton weaving elements. Continuous twill, one-and-three interlacing and pattern twilling; wale angle approximately 55 degrees. Other weave: plain, warp face. Thread count per inch 64 warps by 40 wefts. Warp yarns: two-ply hard S-twist, each single, Z-twist; weft yarns: two-ply hard S-twist, each single, Z-twist. Design and color: bottom of shirt white; at point 16 inches up from loomstring edge, narrow crossbands in continuous twill changing to allover pattern twilling of damask variety; wefts for some bands, and the allover section, brown. Motives: A-shape forms, with stepped edges, small square dots, other geometric units. Red tape fringed on one edge sewn to loomstring (Plate 8 A-C, Diagrams 4, 11).

CONCLUSIONS

The seventeen twill-woven cloths from the Early, Middle, and Late periods pose new problems. Most of the accounts of Peruvian textiles have been concerned with cloths which if not primarily interesting from the aesthetic point of view, first attracted attention for their contribution to analysis of primitive art. The tapestries were among the earliest to be described. Later came descriptions of the magnificent fabrics from the Paracas Necropolis. The craftsmanship on these garments is almost flawless.

With no desire or intention to minimize the achievements of the tapestry weavers or of the Paracas craftsmen, neither of these two groups produced textiles representative of as high technical development as did the weavers of twills. The tapestries are, after all, plain over-one, under-one cloth weave. Their unique texture is the result of heavy battening. The composition of the pattern is a matter of visualizing the design motives and controlling their boundaries or of copying a model. The most intricate tapestries of the Tiahuanaco period are technically similar to the Coptic forms in that the work is more like darning with a needle and length of thread rather than like true weaving on a loom.

The Paracas Necropolis textiles, at least those portions which have aroused the greatest admiration, are covered with figures—animal, human, bird, composite—in which appear from four or five to a dozen or more small and larger areas of color in rigidly maintained sequences. All this patterning is accomplished by embroidery, in simple stitches such as any child could be taught to make. The rarely noted finishes, yards and yards of minute stitchery forming virtually invisi-

ble bands to cover edges and joins, is another aspect. The likeliest explanation for demands of that character are to be sought for among standards, conventions, and prestige values. But again, the base materials of the Paracas embroideries are plain weaves, and the high regard the Necropolis textiles have earned for themselves is almost wholly to the credit of the needleworkers.

Recently, Bonnie Jean Clark and I have found the gauzes, especially the filmy ones from the Late period, amazing expressions of a people's imagination and skill. The problem presented by the gauzes is certainly one of weaving with a generous admixture of a technique akin to plaiting. Miss Clark and I have analyzed the types found among nearly seventy fabrics from the three known periods.[10] Yet we learned that each of the five major and several variant categories into which the lot fell could be reconstructed on a two-bar loom equipped only with the standard shed roll and heddle.

As I pointed out in an earlier section, the loom which provides controls for only two divisions of the warp is inadequate for twill weaving. If we assume that cloths of the fineness of those in the Mochica series were woven with portions of considerable size in twill technique, then we rule out finger manipulation as a probability. Pattern sticks for materials of garment widths (18 and 19 inches for Middle-period specimens) are possible but also an improbable method in my opinion. It is arbitrary to hold a people who have already developed the heddle-rod and pendent loops incapable of extending that knowledge and experience to the utilization of additional heddle devices of the same type. When we find direct evidence to show that the ancient Peruvians did equip their looms with multiple heddles—fifteen of the seventeen in this study would have required two supplementary ones—then we shall have proof that weavers in that locality had conquered one of the most hampering limitations of the backstrap loom.

The eight Early-period textiles from Uhle's Site F represent continuous two-and-two twills, reversed twills of the pointed or true herringbone type, and diamond-pattern twills of both the pointed and broken types. That list is evidence that the local weavers were well past the tentative or trial efforts. To the present time, there are no reported phases of coastal textiles to show the beginnings of the craft.

University of California
Berkeley, California

10 L. M. O'Neale and B. J. Clark, *Textile Periods in Ancient Peru: III, The Gauze Weaves* (University of California Publications in American Archaeology and Ethnology, in press).

THE DISTINCTIVE FEATURES AND DISTRIBUTION OF THE SAN JUAN ANASAZI CULTURE

ERIK K. REED

CONTINUITY of population and racial type in the northern Southwest, from early "Basket Makers" through pre-Spanish Pueblo periods to the historic Pueblo Indians, was recognized several years ago[1] and has recently been convincingly demonstrated.[2] This accords well with the smooth though rapid continuity of cultural development in the San Juan.[3] The former theory that a new element, broad-headed Mongoloid immigrants, entered the Southwest from the Plains or the Basin in the eighth century, bringing the bow and axe, can now be definitely and finally discarded.

Inspired by more advanced cultures, developing slightly earlier, to the south, and ultimately, indirectly, inspired from southern Mexico, through both stimlus-diffusion and occasional actual receipt of material objects, the pre-ceramic Basket Makers of the third and fourth centuries became the comparatively advanced Pueblos of the last thousand years, with no known invasion or infiltration of a different people. The term "Anasazi" can thus be applied to the prehistoric population of the northern Southwest as far back as it is now known—by extension or as a figure of speech, since the word is properly a technical term for the material culture or cultural material of the area. In general, the Anasazi people are of the Southwest Plateau racial type.

The concepts or words Basket Maker and Pueblo are general terms, referring to types of culture as well as to specific Anasazi periods.

Both have been used also to refer to people or peoples—especially prior to the recognition of the unbroken continuity both of physical type in the northern Southwest as well as of Anasazi culture. The term Basket Maker has also been used, perhaps undesirably, for cultural material in areas distant from the San Juan—in Nevada, in West Texas, Coahuila, even Oklahoma—and to refer to the people responsible for it. The word Pueblo refers primarily to the modern sedentary groups of Hopi, Zuñi, and Rio Grande Indians, and their immediate ancestors of the historic period.

1 Seltzer, *New Light on the Racial History;* T. D. Stewart in Roberts, *Archeological Remains in the Whitewater District.*

2 Seltzer, *Racial Prehistory in the Southwest.*

3 Cf. Morris, *Archaeological Studies in the La Plata District.*

The term "Anasazi," then, is actually more specific than the terms Basket Maker and Pueblo, although it comprises them in certain of their meanings. Use of "Anasazi" to mean Pueblo in general is not desirable. Not only a duplication, such usage leads to probably erroneous hypotheses. Properly, the term Anasazi should be restricted to the highly distinctive culture of the San Juan region or northern Southwest. This complex is found in pure or characteristic form only north of the Little Colorado River. It extends from the upper Rio Grande across the San Juan or Four Corners region—the modern Navaho country—and north of the Grand Canyon into the Virgin drainage of southwestern Utah and the Moapa valley of Nevada.

Distinctness of this San Juan Anasazi culture, north of the Little Colorado, was recognized over half a century ago[4] and again very clearly thirty years ago.[5] The importance of this cleavage was lost sight of since, in the attempt to relate all Southwestern cultural developments to a San Juan basis. As indicated by Fewkes fifty years ago and by Kidder in his 1915 paper (published in 1917), the outstanding characteristics of the San Juan Anasazi culture in its developed form (800-900 or 1000-1300 AD) are the compact cellular pueblo with circular ceremonial chambers (kivas) and the black-on-white and corrugated gray pottery. The comparatively crude side-notched or full-grooved stone axe and the lambdoid type of artificial cranial deformation are additional highly distinctive traits.

More general Pueblo traits, characteristic of other groups as well as San Juan Anasazi, include: stone-masonry construction of large villages; maize agriculture (also pumpkins and beans); bow and arrow, hunting of deer, rabbit, etc.; coiled basketry, sandals, cotton cloth; mealing- or grinding-stones and various chipped stone artifacts; bone awls and other implements; ornaments of stone, bone, shell; inhumation of the dead, generally in a flexed position. In architecture, pottery, disposal of the dead, and other features the Pueblo pattern differs sharply from the Hohokam remains of southern Arizona and the Gila-Sonora pattern.

Not all pre-Spanish Pueblo remains, and remains of complexes antecedent to Pueblo developments, are Anasazi. In the early period of pottery-making and food-producing culture, say 300-900 AD, a distinct complex existed in southeastern and east-central Arizona and adjacent southwestern New Mexico. The sites and artifacts found in this area which are datable to the period before 900 AD are different from the contemporaneous Anasazi or Basket Maker-early Pueblo material of the San Juan region. Smoothed or polished well-made brown

4 Fewkes, *Archeological Expedition to Arizona*, pp. 574-576.
5 Kidder, *Prehistoric Cultures of the San Juan Drainage*, p. 112.

pottery, including polished red-slipped and smudged types, forms the index artifact; certain other special features are recognized.

This complex is called the Mogollon "culture" or "root." The separateness and antiquity of Mogollon are now generally admitted, although the affiliation thereto of groups as far apart as the Pecos[6] and the Verde[7] is not fully accepted.

The area of Mogollon or Mogollon-related cultures, originally referred to also as the "southern brownware complex," extends from east of the Continental Divide, in the Mimbres and "lower" Rio Grande areas of New Mexico, through the forested, well-watered uplands of the Mogollon Rim country, to Flagstaff and the Verde River, and from Chihuahua and southeastern Arizona to the Little Colorado and the Petrified Forest.

In later periods, complexes or groups of Pueblo culture are found throughout the area of Mogollon-like early material. Hence, the term Anasazi has been incorrectly applied. Actually, the later, Pueblo complexes of this area (1000-1400 AD) develop out of Mogollon in much the same fashion as Pueblo culture developed from Basket Maker in the San Juan region.

A surge of northern or Anasazi influence in the Mogollon-Mimbres area has often been mentioned.[8] This is caused partially by confusion of "Pueblo" with "Anasazi." Psychologically, so to speak, it is a holdover from, or compromise with, the former hypothesis of derivation of all Southwestern manifestations from the San Juan. Also, it is due to the desire to determine a "pure" Mogollon complex and to emphasize its greater antiquity in comparison to early Anasazi (San Juan Basket Maker). The concept of a wave of "virile" Anasazi cultural influence "submerging" the backward or mild, timid, retiring, and conservative Mogollon group is actually based specifically on only two factors: pueblo architecture and black-on-white pottery.

Formerly, physical type was also considered a distinction, but no longer can be so regarded.[9] Early Mogollon skulls, as well as the later or Pueblo groups in the Mogollon areas, are, in general, of "Pueblo type"—Southwest Plateau type, that is, with deformed skulls. Deformation is, so far as known, vertical occipital; never of the lambdoid type characteristic of the San Juan Anasazi. Cranial deformation occurs far earlier in the south. Skulls found at one of the earliest

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6 Jennings, *A Variation of Southwestern Pueblo Culture.*

7 Colton, *Prehistoric Culture Units.*

8 Martin, *The SU Site; The SU Site, Second Season;* Rinaldo, *Conjectures on the Independent Development;* Haury, *Excavations in the Forestdale Valley; The Archaeological Survey on the San Carlos Indian Reservation.* Cf. Reed, *Implications of the Mogollon Concept;* Review of *The SU Site* by Paul Martin.

9 Haury and Sayles, Review of *The SU Site* by Paul Martin.

Mogollon manifestations, the SU site, are occipitally deformed; consequently brachy- and hypsicranial.[10] The few skulls from other early Mogollon sites which have been recovered and studied seem to differ slightly from the Southwest Plateau type, but in general fall within the range of Southwest Plateau in measurements not affected by deformation.[11]

The occurrence of pueblo architecture—above-ground construction of compact masonry buildings—seems an obvious Anasazi influence. Yet the most distinctive feature of the Anasazi pueblo, the standardized circular kiva, does not appear south of Forestdale and Flagstaff. Admitting the priority of surface pueblos in the Anasazi area, which is perhaps not as positively established as is generally assumed, it appears that the more southerly Pueblo groups simply received from the Anasazi the idea of building large compact cellular surface houses of stone.

Black-on-white pottery was developed by the Anasazi after about 500 AD. It occurs intrusively, as trade pieces from Anasazi sources of manufacture, in early Mogollon and Hohokam. Black-on-white also was locally made at Forestdale (basically or originally Mogollon) after about 800, developing in the White Mountains area into the well-known and widespread Tularosa-Roosevelt-Klageto Black-on-white series. Black-on-white pottery was also made in the Mimbres after about 1000 AD, superseding the earlier Mogollon Red-on-brown type; but Mimbres Black-on-white is oxidized-fired with an iron-free white slip. Not only is a red-on-white transition recognized, but also a good deal of the black-on-white of the classic Mimbres culture is wholly or partially red-on-white, with dark bowl-exteriors.

In neither case was the introduction of black-on-white accompanied by the other major Anasazi type of pottery, corrugated gray. Utility ware continued to be polished brown or red throughout the Mogollon region, from Flagstaff to the Mimbres and south-central New Mexico. Brown polished corrugated forms appear, as well as plain and red-slipped. Corrugation is a trait which apparently developed at least as early in the Mogollon complex as in Anasazi[12] but was never so ubiquitous as in the north.

The complexes of Mogollon derivation share with San Juan Anasazi the general Pueblo traits of large masonry structures, agriculture supplemented by hunting, painted and corrugated pottery, stone and bone implements and orna-

10 Marjorie Kelly in Martin, *The SU Site; The SU Site, Second Season.*

11 T. D. Stewart in Roberts, *Archeological Remains in the Whitewater District;* G. Neumann in Jennings, *A Variation of Southwestern Pueblo Culture.*

12 Haury, *Excavations in the Forestdale Valley.*

ments, cranial deformation, and inhumation of the dead. The circular kiva is lacking, however, and is replaced by rectangular ceremonial chambers, if any. There are fundamental distinctions in pottery. Cranial deformation is of the vertical occipital type instead of lambdoid. The stone axe is the well-made and polished three-quarter-groved Gila type. Probably other, minor, distinctions are to be found.

In the White Mountains and Verde-Flagstaff areas (including the Prescott branch with its Hohokam-like or "Patayan" pottery, and including the Salado invasion of the Hohokam area), inhumation is consistently extended, in contrast to the comparatively rare Anasazi occurrences among normal flexure. Flexed or semiflexed inhumation continues in Mimbres and Chihuahua, as well as in Anasazi.

In the original definition or proposal of the term, Anasazi was not equated with Pueblo; restriction to the Northern Pueblos or "San Juan kiva culture" or grayware complex is implied: "The word Anasazi . . . would apply to the Basket Maker and to those Pueblo groups which can be shown to have derived the basic framework of their material culture from the Basket Maker."[13] More precise definition of the term Anasazi, along the same line, is now suggested: the distinctive cultural sequence (and, by extension, the people concerned) of the San Juan or Four Corners area, extending in space from the upper Rio Grande to the lower Virgin River, and extending in time from before 300 up to 1300 AD, continuing after 1300, with further changes, in the upper Rio Grande.

In the earliest known phase (before 200 to about 400 or 450 AD) Anasazi culture is characterized by coiled basketry, fur-cloth, sandals, throwing-spear and atlatl, and the curved wooden club. The transitional phases (450-950 AD) are distinguished by the appearance of pit-houses and rough gray pottery; and by the gradual addition of bow and arrow, side-notched stone axe; small surface structures of stone; black-on-gray and black-on-white, coil-neck gray, red-on-orange and black-on-red pottery; artificial cranial deformation (of the lambdoid type). In the developed Anasazi culture of 950 or 1000 AD to 1300 AD are found masonry pueblos with circular kivas, black-on-white and corrugated gray pottery (also Tusayan Black-on-red and Polychrome), full-grooved or side-notched stone axes; a variety of stone and bone implements and ornaments, comparatively few shell ornaments. Cranial deformation is both lambdoid and—at least at Mesa Verde—vertical occipital. Inhumation of the dead is predomi-

13 Kidder and Shepard, *The Pottery of Pecos*, p. 590; cf. Colton, *Prehistoric Culture Units; Reconstruction of Anasazi History.*

nantly in a flexed position, with supine extension fairly frequent, throughout the sequence.

Sites combining these traits are found throughout the plateau area of the northern Southwest—the Four Corners region or Navaho country and adjacent districts—from the upper Rio Grande, including an extension into the Pecos River valley, across the San Juan drainage to the Virgin drainage. The northern

FIG. 1. Location of Anasazi and other archaeologic areas in the Southwest.

boundary is formed by the Dolores River in southwestern Colorado, the middle Colorado River in Utah from Moab to the Escalante, and approximately the watershed of the Virgin drainage south of the Escalante desert and Parowan valley. Peripheral groups to east and west—the Rosa-Largo development in northern New Mexico and the Moapa valley material in Nevada—show variations, but are essentially Anasazi. In the Northern Periphery in Utah, north of the boundary suggested above, the numerous though attenuated Puebloan features are, of course, Anasazi.

The southern boundary of true Anasazi is undetermined in New Mexico—from a point on the Rio Grande near Isleta or Belen, to a point south of Zuñi but north of Luna (possibly the watershed of the Upper Gila-Tularosa drainage). The boundary is formed approximately by the Little Colorado valley in eastern Arizona and approximately by the Grand Canyon of the Colorado in

western Arizona. Actually, there are a few pure Anasazi sites, as well as considerable Anasazi cultural influence, on the south side of the Little Colorado; and the few sites known on the south rim of the Grand Canyon appear to be primarily Anasazi. Isolated Anasazi elements occur separately still father south —a pair of circular great kivas at Forestdale, corrugated gray pottery in the Blue-River-Tularosa area, high percentage of lambdoid deformation at Winona, occasional crudely made full-grooved axes.

But, as a whole, the area which yields early material of Mogollon type—the forested well-watered upland areas inhabited historically by the Western Apache, from the Mimbres across the Upper Gila and Salt to the Verde valley and San Francisco Peaks—is characterized in the period 1000-1400 by distinct traits. The stone or adobe pueblos or puebloid structures have rectangular ceremonial rooms, if any. The pottery consists of brown polished utility ware, black-on-red and polychrome developments, and distinctive black-on-white series. The three-quarter-grooved polished stone axe and vertical occipital cranial deformation are typical. Extended inhumation also characterizes certain branches: Salado (Pueblo intrusion into Hohokam territory), Sinagua (Flagstaff-Verde), Prescott (West Verde area, Hohokam-like pottery) and Cibola (White Mountains, Upper Salt). Extended inhumation is minor in Anasazi, and absent in Mimbres, south-central New Mexico, and Chihuahua, areas also of Mogollon affiliation or derivation.

These groups are all sufficiently different from the San Juan culture that, although obviously Pueblo, they cannot properly be called Anasazi. They are sufficiently alike, moreover, that they should be grouped broadly together. If the term Anasazi is to be applied to pre-ceramic Basket Maker material and full-developed Pueblo culture in the San Juan area, the term Mogollon can be used for the entire brownware development of southern New Mexico and central and eastern Arizona, from before 300 AD to after 1300 AD.

In any case, the San Juan Anasazi complex of the plateau is a highly distinct and notably specialized development which should not be confused with Pueblo culture as a whole, although contributing importantly to the modern Pueblo population and culture.

Within the Anasazi cultural domain there are important areal distinctions, geographic as well as temporal subdivisions. Peripheral complexs, such as the Rosa phase in the Gobernador[14] and the later Largo phase in the Gallina[15] on the northeast border of Anasazi culture, show a number of variations. The Moapa

14 Hall, *Early Stockaded Settlements.*
15 Mera, *Some Aspects of the Largo Cultural Phase.*

valley pueblos in southern Nevada are a pale reflection of Anasazi civilization, just barely classifiable as Anasazi on the basis of pottery and lambdoid deformation.

The central area containing the majority of Anasazi remains—the Navaho country—may be divided in two after about 500 AD, and especially after about 900 AD, with the boundary approximately at the Chinle valley in northeastern Arizona. They may also have been a certain degree of east-west separation among the pre-ceramic Basket Makers before the late fifth century also, probably less important and certainly less obvious.

In the period 500-800 or 900 eastern Anasazi culture in the upper San Juan is distinguished by iron-paint decorated whiteware or grayware and rock-tempered plain and coil-neck gray utility pottery; western Anasazi pottery by carbon paint and sand temper, and a red-on-orange and black-on-red development (manganese paint, oxidizing atmosphere, rock-tempered, polished) which centers in southeastern Utah, with late forms reappearing in the Flagstaff area, and appears only as a trade intrusive in the La Plata phase of southwestern Colorado-northwestern New Mexico, in Chaco Canyon and in the Rosa phase, and in the Tsegi or Kayenta district. Distinctions in other categories than pottery are less clear.

In the period of developed culture, about 900-1300 AD, differences are clearer. This epoch may be subdivided as follows:

A Northeastern Arizona

1 Pueblo II, probably 860-1130 AD.
Circular masonry pit-houses, small surface storage structures. Black Mesa Black-on-White (carbon paint), Tusayan Corrugated (sand-tempered gray utility jars); Bluff, Deadmans and Tusayan Black-on-Red (derived from the early red-on-orange and black-on-orange of southeastern Utah).

2 Pueblo III, 1130-1300 AD.
Small and large stone pueblos with circular kivas. Flagstaff-Tusayan Black-on-White (carbon paint), Tusayan Corrugated, Tusayan Polychrome.

3 The final Tsegi or Kayenta phase, 1250-1300 AD.
Large cliff-dwellings, with circular kivas and rectangular kihus, in the Tsegi canyons. Kayenta Black-on-White, Kietsiel Gray (corrugations obliterated), Kayenta and Kietsiel Polychromes (late variants of Tusayan Polychrome).

B Upper San Juan (the immediate Four Corners vicinity; southwesternmost Colorado and northwestern New Mexico)

1 Early Classic, Pueblo III A, Chaco Period, 950 (?)-1150 AD.

Large pueblos of excellent masonry. Circular kivas, detached and intramural; and Great Kivas (usually in pairs, apparently). Chaco-Mancos Black-on-White, iron-paint; rock-tempered corrugated gray jars.

2 Mesa Verde phase, Pueblo III B, 1150-1300 AD.

Large and small pueblos and cliff-dwellings. Typical "keyhole" shaped kivas. Towers and structures of bizarre ground-plan. Mesa Verde Black-onWhite (carbon paint); neatly-indented corrugated gray.

The Mesa Verde phase or focus was an exceptionally widespread development, with at least the pottery surprisingly uniform over a wide area: southeastern Utah, southwesternmost Colorado, the Chinle valley in northeastern Arizona, and northwestern New Mexico with an extension to the upper Chaco and the Rio Puerco.

The entire San Juan drainage was abandoned about 1300, at the time of the great drought, and probably because of arroyo-cutting caused by it.[16] The latest tree-ring dates known at present for the Anasazi in the San Juan are 1286 at Kietsiel in the Tsegi and 1284 at Tower House in Canyon del Muerto. Outside the Chinle drainage, the latest San Juan dates are 1272-1274 at Mesa Verde, just pre-drought.

Undoubtedly, the people of the Tsegi area and the Mesa Verde people of the Canyon de Chelly region of the Chinle moved in to the Hopi country on southwestern Black Mesa, although a preponderance of cultural material (and presumably population) of southern derivation, from the Little Colorado area, is observable in late-prehistoric Hopi.[17] The people of the Mesa Verde phase east of the Chuska-Lukachukai-Carrizo mountain chain evidently moved down the Rio Puerco to the Galisteo Creek area of the Rio Grande.[18] As the Chaco Canyon and Mesa Verde foci declined and disappeared, the Rio Grande Pueblo population increased.[19]

The Anasazi culture persisted, with local modifications, in the Rio Grande

16 Reed, *The Abandonment of the San Juan Region.*
17 Brew, *The First Two Seasons at Awatovi*, p. 134.
18 Mera, *Ceramic Clues.*
19 Kidder, *The Artifacts of Pecos;* Kidder and Shepard, *The Pottery of Pecos.*

long after the abandonment of the San Juan. Such typical elements as circular kivas (characteristic throughout Rio Grande history to the present time), and specifically pairs of large round kivas, survived. Black-on-white pottery was made after 1300 only in the Rio Grande valley, and never entirely superseded by glaze-paint polychromes. Black-on-white continued to about 1500 among the Tewa, and was made at Jemez until after 1700.[20] Rough dark-gray culinary jars continued throughout most of the period of polychrome and glaze-paint decorated ware. Full-grooved stone axes, as well made as the three-quarter-grooved Gila axe, appeared with the introduction about 1350 of glaze-paint redware.[21] Vertical occipital cranial deformation seems to replace the lambdoid type in the upper Rio Grande at about the same time.

Continuity of culture and population can thus be traced in the northern Southwest, from the Basket Makers of Grand Gulch (Utah), Marsh Pass (Arizona), and Durango (Colorado) through a period of sixteen hundred years to the modern Rio Grande Pueblos.

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20 Mera, *Ceramic Clues.*

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SANTA FE, NEW MEXICO

PETROGLYPH COMPLEXES IN THE HISTORY OF THE COLUMBIA-FRASER REGION

MARIAN W. SMITH

THE CULTURES of the Columbia-Fraser region are commonly thought of as mere extensions of more northerly, typical Northwest Coast cultures despite the fact that various suggestions of influence from other directions have occasionally been made. Petroglyph types in this region are by no means randomly distributed, and it is possible to show on the basis of petroglyph and related material that local stylistic features are best seen as particular expressions of complexes manifested widely in the general area.

The Columbia-Fraser region covers the lower reaches of the Columbia and Fraser drainage systems and the territory between them. Both rivers plunge precipitately from the mountains to the coastal plain, the Columbia at the Dalles and the Fraser through the canyon of the Fraser above Yale. The area considered here lies entirely within the coastal plain west of these points (Fig. 1). It includes parts of northern Oregon and of southern British Columbia, and all of western Washington surrounding Puget Sound and adjoining waters. For the purposes of this paper the Olympic Peninsula, extreme western Washington, has been omitted.

At the time of white contact, the area thus delimited was dominated by peoples speaking Coast Salish languages. A few Sahaptins had filtered into the southern part of the region from the east; small and isolated Athabascan groups may have occurred in the southwestern section; and the northwestern part of the region still held remnants of Chemakum-speaking peoples. These minorities were greatly outnumbered, however, by the Coast Salish, who also controlled the overwhelming proportion of the occupied territory. The villages of the Coast Salish were politically autonomous, and marked cultural differentiations appeared in local areas. Yet the underlying cultural traits were similar. The Columbia-Fraser region might, therefore, also be referred to as the Coast Salish area except for the fact that the Olympic Peninsula Salish and those to the north along the Straits of Georgia are not included in the region as geographically defined here.

The petroglyphs of this region have never been described, and the materials for a complete survey have, so far as I know, not been collected. Nevertheless, I obtained several illustrations of petroglyphs from the southern part of the

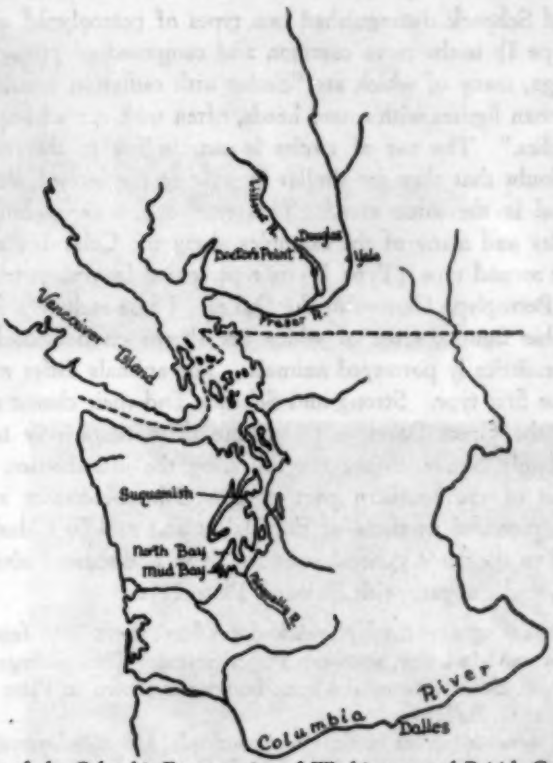

FIG. 1. Map of the Columbia-Fraser region of Washington and British Columbia, showing the location of petroglyph sites.

region while engaged in ethnological work there and during a recent field trip in the northern section[1] ran across a petroglyph of quite different style and ethnological connotation. The contrast between the two led to consideration of the literature on the petroglyphs of the neighboring Dalles and middle Columbia River valley. I believe it is now possible to distinguish between three petroglyph complexes in the Columbia-Fraser region and to suggest something as to their cultural affinities.

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1 The first of these trips, in 1935-36 and 1938, were financed by the Columbia University Council for Research in the Social Sciences. The last, in 1945, was a student trip under my direction financed by the Department of Anthropology of Columbia University. Appreciation also goes to Arthur C. Ballard, Ernest Bertelson, and Mrs A. E. Rendall for their interest and friendly help.

Strong and Schenck distinguished two types of petroglyph[2] at the Dalles.[3] The first (Type I) is the more common and composed of pictographs of conventional design, many of which are "circles with radiating arms, broken disks, scrolls and human figures with round heads, often with spread arms, and simply delineated bodies." The use of circles is outstanding in this type and there can be little doubt that they are similar in style to the incised, decorative stone figurines found in the same area.[4] This type occurs throughout the middle Columbia valley and many of the examples along the Columbia are true petroglyphs.[5] The second type (Type II) is represented by true petroglyphs found principally in Petroglyph Canyon at the Dalles. These include a few elaborated anthropomorphic figures, some of which are shown on horseback, but consist primarily of realistically portrayed animals. The animals differ markedly from the style of the first type. Strong and Schenck find their closest approximation southward in the Great Basin and attribute them tentatively to Shoshonean migrants, probably Snake, in the era following the introduction of the horse.

Petroglyphs of the southern part of the Columbia-Fraser region do not seem to be as plentiful as those of the Dalles and middle Columbia but they clearly belong to the same general style as Type I, discussed above (see Plate 10 and Fig. 2, and compare with Steward, Plate 12).

Plate 10, A shows a petroglyph-marked boulder about 200 feet north of its original location on Mud Bay, southern Puget Sound. This photograph was taken looking south. A closer view of the same boulder is shown in Plate 10, B (photographs by Arthur C. Ballard).

Plate 10, C shows a similar boulder with multiple, less coördinated designs which is (or was) located near Victor dock on North Bay, southern Puget Sound (photograph by Arthur C. Ballard).

Figure 2 shows the petroglyph markings on a boulder off Agate Point near Squamish across from Seattle on the western shore of Puget Sound. The boulder

2 A distinction was made in the earlier literature between petroglyphs or incised rock figures and pictographs or painted rock figures. Recently, however, Steward (*Petroglyphs of the United States*, p. 405) has found it preferable to "designate all designs and figures on rocks petroglyphs (literally rock glyphs) and to reserve pictograph for that primitive type of writing in which objects and events are represented pictorially on all kinds of materials." This paper follows Steward's usage except where the materials under discussion have been otherwise described by other authors, as for instance the Dalles figures. But it is to be noted that Cressman (*Petroglyphs of Oregon*) found the earlier distinction valuable.

3 Strong and Schenck, *Petroglyphs Near the Dalles*. The type numbers are mine.

4 Heizer, *Decorated Mortar;* Smith, *Columbia Valley Art Style;* Strong, *Occurrence and Wider Implications of a "Ghost Cult."*

5 Steward, Plate 12, c, and Strong, Plate 2, upper figure, appear to be the same petroglyph although Steward's plate shows the incised lines chalked, probably for purposes of photographic clarity.

A

B

C

PETROGLYPHS OF PUGET SOUND
A and B, Mud Bay; C, North Bay

A

B

C

D

PETROGLYPH AND POWER BOARDS

A and B, The Little Doctor of Harrison Lake; C, Snoqualmie power board; D, Power boards set up as though to be used in the soul recovery ceremony, Snoqualmie.

is (1941) exposed only at low tide and may now be approached by boat at about three-quarters tide. The bank here is eroding and a hundred years ago the rock must have stood close to or on the shore. The rock is roughly six to seven feet long and the incised lines are about an eighth of an inch deep, each line being about an inch and a half across (drawing by Ernest Bertelson).

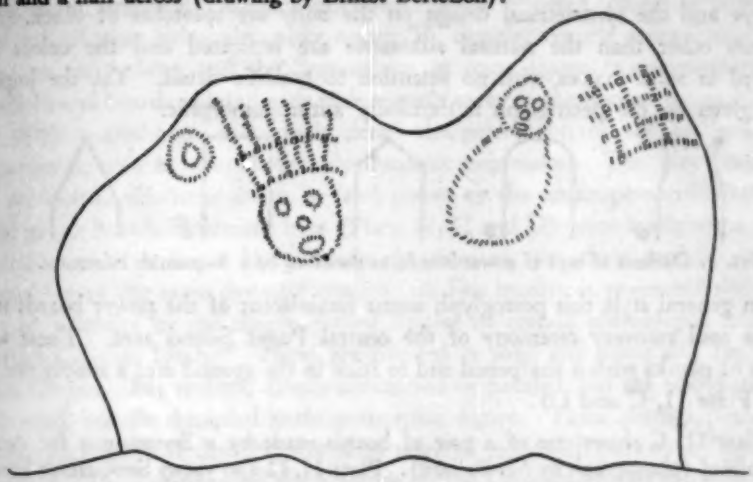

Fig. 2. Petroglyph markings on a boulder off Agate Point, near Suquamish, Puget Sound.

Contact between the Columbia and southern Puget Sound was made via the Cowlitz-Nisqually prairie, and the cultures of southern Puget Sound bore striking resemblances to those of the northern shores of the Columbia up as far as the Dalles. Despite the gap in published petroglyph material for the lower Columbia, there seems little question that the southern Columbia-Fraser petroglyphs and those of the Dalles-middle Columbia, Type I, form part of a single continuous distribution.

A petroglyph of different style (Plate 11, A and B) comes from the northern part of our region and from the most northern point in inland Coast Salish territory. Kaiyama or the "Little Doctor" is on Doctor's Point on the west shore of Harrison Lake, British Columbia.

Plate 11, B is a close-up of the petroglyph. Plate 11, A shows the log jam which has formed at its base: the rock wall goes straight down below water level (photographs by Mrs A. E. Rendall).

A stream just north of this point once supported a village of Coast Salish related to the people at the southern part of the lake. North of this lay the territory of the Lower Lillooet, an Interior Salish people with villages along the

Lillooet River to its mouth and the present site of Douglas at the head of Harrison Lake. The petroglyph covers a natural rock formation shaped like a headed figure. The body and face are painted solidly with red ochre, the upper part of the head (or hat ?) and the single eye are done in white, the center of the eye and the symmetrical design on the body are splotches of black. No outlines other than the natural silhouette are indicated and the colors are applied in solid masses with no attention to realistic detail. Yet the impression given by the petroglyph is decidedly anthropomorphic.

FIG. 3. Outlines of tops of power boards, as described by a Suquamish informant.

In general style this petroglyph seems reminiscent of the power boards used in the soul recovery ceremony of the central Puget Sound area. These were made of planks with a sharpened end to stick in the ground and a simply cut top (see Plate 11, C and D).

Plate 11, C shows one of a pair of boards made by a Snoqualmie for Arthur C. Ballard (photograph by Mr Ballard). Plate 11, D also shows Snoqualmie boards: in this case set up as for the soul recovery ceremony (which was, of course, always performed indoors), in conjunction with the small anthropomorphic carvings and painted poles used at the same ceremony (photograph given me by Jerry Kenum of Tolt, Washington).

The total effect of these boards is not particularly anthropomorphic but the cut tops are known as "heads" and bands of cedar bark are often placed around the "necks." So far as I know, all existent boards are of the shape illustrated. But a Suquamish informant reported that he had seen other shapes in use (see Fig. 3).[6] Figure 3,a might be considered somewhat anthropomorphic and the tops of those in Plate 11 might be interpreted as bird heads. The boards are always made in pairs, and they are occasionally referred to as male and female. In any case, they afford a simple outlined form used as a surface for painting. It is to be particularly noted that only one side of the board is painted (see Plate 11, D).

Boards of this type occur only in the central Puget Sound area among the Suquamish, Duwamish, Snoqualmie, Snohomish, and Skykomish. In the southern Puget Sound area, the Puyallup-Nisqually performed the soul recovery ceremony but without the use of power boards. On the other hand, the Nisqually

6 The author's fieldnotes, 1938; see also Waterman, *Paraphernalia*, pp. 295-300, Fig. 50.

placed boards which were cut square across the top within the houses of shamans and these were "painted in red on one side 'to show a man'."[7] The use of painted boards is also reported from the neighborhood of the Dalles. In 1811 Ross Cox saw grave boards "carved and painted with rude representations of men, bears, wolves and animals unknown. Some in green, others in white and red and all most hideously unlike nature."[8] Scouler reports canoe burial some fourteen years later and the "canoes are in some instances ornamented with feathers and boards painted with rude resemblances of the human figure."[9]

With a minimum of realistic detail the petroglyph of the Little Doctor manages to give an overwhelmingly dynamic impression. The very constraint of the simple silhouette seems to lend power to the anthropomorphic concept. The power boards illustrated here (Plate 11, C and D) were made when Puget Sound culture and art had already deteriorated, yet their outline suggests something of the same dynamic quality. A like quality is presented with even greater intensity by the simple outline figures of certain petroglyphs found in Barrier Canyon, Utah.[10] These are painted in solid red ochre and are larger than life size. No realistic details are incised or painted, but the whole suggests a headed, heavily shrouded anthropomorphic figure. These petroglyphs are so amazingly impressive that they are often referred to by such phrases as "godlike."

Strong[11] has emphasized the presence on the Columbia of an art style which portrays ribs within an anthropomorphic figure, and, coupled with the solidly painted Utah petroglyphs, appears at least one figure of the same silhouette with splotches of paint which might well be interpreted as ribs.[12] These are also reminiscent of the symmetrical splotches on the body of the Little Doctor, although the latter would not ordinarily be regarded as a ribbed figure.

The Utah petroglyphs also include two different, though apparently related, forms. The first is composed of small, solidly painted figures with line excrescences representing arms and legs.[13] These seem to be filled-in line drawings and their total effect is lively but delicate. Because of their resemblance to certain pottery decorations of the early Southwest, these are sometimes referred to as of Basket Maker date or origin. The second style is composed of squarely built figures with accentuated waists, done in outline with a wealth of realistic detail.[14]

7 Smith, *Puyallup-Nisqually*, pp. 114-115.
8 Cox, *Adventures*, p. 125. 9 Scouler, *Journal*, p. 280.
10 Steward, Plate 4, b; Douglas and d'Harnoncourt, *Indian Art*, p. 25.
11 Strong, *Occurrence and Wider Implications*.
12 Steward, Plate 4, b. 13 Steward, Plate 4, a.
14 Steward, Plates 3 and 5; Douglas and d'Harnoncourt, Fig. 31. The latter publication calls all of the three Utah styles mentioned here "Basket Maker."

The faces are drawn; the heads are complete with earrings and hair; and the bodies are clothed with costume detail. They utterly lack any dynamic quality. The general square effect of many of these figures, plus their interest in elaborate costume, strongly suggests modern katchina figures of the Southwest.

One is tempted to erect an historical sequence for these Utah petroglyphs: Basket Maker is known to be early, and from its art style developed two currents, one of which moved south and is represented today in the Pueblo katchinas and the other of which moved north and was represented in the historic period by the painted boards of the Columbia River and Puget Sound. Such a reconstruction is tempting, but petroglyph material remains almost impossible to date, and, as stated, the reconstruction is too simple to be of much use in unraveling the intricate path of events which connects the Southwest and the Northwest. The most that may be said on the basis of this petroglyph material alone is that there existed in Utah at least three related but distinct art styles which tie in in some manner with the art forms of adjoining areas.

Fortunately, in dealing with historic materials we need not depend solely on petroglyphs. We know, for instance, the place which the Little Doctor holds in the thought of the people of Harrison Lake. It stands facing the narrowest part of the lake where the water is always rough no matter how calm it be above and below Doctor's Point. This is also the deepest portion of the lake and represents the greatest hazard in lake travel. In passing, the Indians used to throw a bit of food or some small article into the water from their canoes; today vacationists send nickels and dimes overboard from fishing boats and pleasure launches. Stories of the power of Kaiyama are well-known by Indian and white alike.

It is said that a "white fellow" once gave whiskey to the Little Doctor, who then got drunk, and the lake was stirred into great waves. Once a priest going past Doctor's Point said "Kaiyama is nothing." So he did not feed Kaiyama and he did not let the Indian canoe-man feed him. Great waves came up and "the father cried like hell." The Indian said, "Pray, father." But the priest "forgot all about the church and cried till they got ashore."[15]

The origin of the Little Doctor goes back to a power duel between a man and woman in which the man had the final say: "You cannot beat me for I will be a rock and all the people who come after us will see me."[16] That this is no new explanation may be suggested by the fact that a somewhat similar tale was

15 Fieldnotes of Robert Hill, 1945.
16 *Ibid.*

recorded by Boas fifty years earlier:[17] Qäls had a power duel with Shäi who lived on the north end of Harrison Lake, and after a series of events Qäls killed Shäi and turned the various parts of his body to stone.

Many natural features in Coast Salish territory, especially rock formations and islands, are said to have originated through the deeds of the Changer (Qäls in the story above). At some places he rested and the marks of his feet or his body are still visible, at other places he turned people to stone. Thus, Mount Cheam just south of Harrison Lake has a large peak and four smaller ones which were originally a woman and her four daughters. As one woman said, "I've never been able to see but four peaks altogether but there must be five because the story says there are five."[18] These tales of the origin of natural features occur among all the Coast Salish. Each landscape has its own mythology. Yet in all these, one element remains constant: the natural features are completely natural, they are not marked by incising or paint or any other mark of man.

The Little Doctor, therefore, does not actually belong with such landmarks and it may well be that the story recorded by Boas refers to other natural features of northern Harrison Lake and not, specifically, to the Little Doctor. It will be remembered that the Boas story refers to the formation of several features, not to one alone, but the exact description of these is omitted. Much more significant is the clear tie of the Little Doctor to the power duels of historic personalities, a man and a woman. Such duels were important expressions of the religious beliefs of the Coast Salish,[19] and the whole behavior of Kaiyama, confounding the priest and causing waves in his drunkenness, is of the sort which would be quite typical of a person having exceptional supernatural power.

The power boards of central Puget Sound also have a strong relation to the supernatural. The soul recovery ceremony in which they were used was the most spectacular ceremony of the Coast Salish. In it a number of shamans participated, and each human actor "took along" his supernatural helpers, which were represented by small carved figures[20] and by boards. Thus, each shaman made his own power boards and they were of supernatural aid to him only. During the ceremony the boards were seen to move and the "canoe" in which the shamans journeyed to the land of the dead in order to recover the stolen soul was said to be formed by the boards. Only models of power boards exist in

17 Boas, *Indianische Sagen*, p. 21.
18 Fieldnotes of Helen Codere, 1945.
19 Smith, *Puyallup-Nisqually*, p. 61.
20 Paul S. Wingert has recently completed a detailed study of Coast Salish wood sculpture.

our museums today, for the real boards, like other power objects, were abandoned after use or between ceremonies.[21] Instances are told of these abandoned objects "calling out" to persons who pass by.

The boards reported from Nisqually, farther south, were also identified with the powers of individual shamans, and one informant told how his uncle's boards chased him in his sleep: "I ran and those boards chased me."[22]

Farther south at the Dalles, Strong and Schenck report that the naturalistic petroglyphs, Type II, were said by "the older men of the Wishram Indians" to represent "the 'spirit' (or power) of the artist."[23] But the report continues that "they made no distinction between the unique petroglyphs of the canyon and the much more abundant and apparently more ancient pictographs which characterize all the rim rock borders of the vicinity" (Type I). They also quote Sapir[24] to the effect that in a Wasco village at the Dalles a man "made pictures on the rocks to amuse the youngest child—pictures of deer, birds and weapons." In illustrating a petroglyph of Type I from southern Hoods Canal, Mallery quotes Eells to the effect that it was "made by a man who felt very badly and went and sat on the rock and with another stone hammered out the eyes and nose."[25] But the report goes on to say that for a time the Indians "believed that if the rock were shaken it would cause rain."

Pictures made on rocks to amuse children or to fill idle moments would have no identification with religious power. Yet the situation remains unclear for the Dalles and Hoods Canal. Ethnological inquiry might clarify the point. Certainly, the situation among the Coast Salish of Puget Sound is quite clear: all petroglyphs (Type I) were the work of children or of "long ago" adults and in neither case was there any religious significance.[26] The Suquamish boulder (Fig. 2) was said to have been marked by Kitsap, a famous Suquamish warrior long dead, and Sam Wilson, a Suquamish, said in 1941 that once he too "put his mark on it."[27] Sam Wilson never used such a phrase in describing religious power. In 1938 he was seen to decorate a bone knife handle with a design composed of circles with dots in their centers. The design certainly carried no religious meaning. At that time he said such designs were used by gamblers to mark their gambling bones. This is completely corroborated for the southern

21 Smith, *Puyallup-Nisqually*, p. 116.
22 *Idem.*, p. 120.
23 Strong and Schenck, *Petroglyphs Near the Dalles*, p. 86; parentheses mine.
24 Sapir, *Wishram Texts*, pp. 242-243.
25 Mallery, *Picture-Writing*, p. 485.
26 Smith, *Puyallup-Nisqually*, p. 186.
27 Communication from Ernest Bertelson.

Sound where gambling bones "were incised with patterns composed of simple circles and of circles with dots in their centers."[28] These designs bore no implications of religious power but were used so the gambler could quickly recognize the presence of an unfamiliar bone in his set.

In direct contrast to this, the animals painted in semi-realistic style on the power boards of the central Sound (Plate 11, C and D) were patterned after supernatural powers. Thus, a shaman who "had" a one-eyed bear "for power" would paint a one-eyed bear on his board. Alice Cross, a Duwamish informant who worked with Arthur C. Ballard, told of a boulder which stood near Youngstown adjoining West Seattle. She spoke of various animals pecked on the rock and related them definitely to power figures. The first person to mark the boulder was the father of one of her older contemporaries and, like the Suquamish boulder, it was used by more than one person. A semi-realistic style may, therefore, also appear here as a petroglyph style, although no examples are available.

In the same way, any Indian of the northern Sound who "had a power" could paint it on inside house wall or post. The present "totem pole" at Swinomish is an excellent example of this. The pole was made by a Sammish in imitation of northern totem poles. It carries a series of separated, semi-realistic animals and anthropomorphic figures carved in low relief. The figures are generally painted in solid color and bear no artistic relation to each other. Each represents the "power" of a "power person" of the reservation. It was only in such terms that the Salish of Puget Sound could make any sense out of a totem pole. Artistically and conceptually the Swinomish pole is about as far removed from a true totem pole as it could be. Yet its animals, like those of the power boards, represent individual powers and have strong religious connotations.

The semi-realistic animals of the Dalles, Type II, were attributed by Strong and Schenck to Shoshoneans from the Great Basin of Utah and Nevada where petroglyphs of similar type occur. Cressman reports numerous petroglyphs of the same style from Oregon. It now appears that the Coast Salish of northern and central Puget Sound used semi-realistic animals of somewhat similar type. At least for the northern Sound these appear to be fairly recent adaptations to northern influence. The question then becomes whether semi-realistic figures at the Dalles should be connected with petroglyphs to the south or board paintings to the north. It will be noted that none of the references to semi-realistic figures claim any great antiquity for them. They seem indeed to belong to the historic period, i. e. after white contact, and just preceding it. Influences from

28 Smith, *op. cit.*, p. 211.

the Plains certainly entered the prairie lands of the plateau and coastal plain with the introduction of the horse. Semi-realistic decorative drawings may well have been among them. It seems best, therefore, for the present to recognize two possible sources of semi-realistic figures at the Dalles: one from the south and east via prairie land routes and one in response to northern influence via the more usual water routes. The former of these held little or no religious feeling and the latter was deeply religious. I suspect that the semi-realistic petroglyphs described by Strong and Schenck (Type II) are, as they suggested, related to the first of these, and that the grave boards described by Cox, Scouler, and others tie with the second and are slightly older. Such a situation would account for the apparent confusion of the Indians at the Dalles in regard to the significance of semi-realistic figures.

It will be remembered that no mention of semi-realistic animal figures is made for southern Puget Sound. Personal contacts between central and northern Puget Sound and Vancouver Island were relatively common in the early historic period. Throughout the Columbia-Fraser region semi-realistic figures, where they occur, are related to concepts of individual, religious power, and the southern influence toward non-religious, semi-realistic figures seems not to have penetrated beyond the Dalles. Classical Northwest Coast art of the historic period was highly conventionalized, and, although realistic animals are known from the archaeological period in the northern part of our region, they were always carved dishes, etc., of no known religious meaning and quite unlike the rude board paintings under discussion. It seems probable, therefore, that the semi-realistic, religiously-weighted figures of the Columbia-Fraser region were not directly derived from the north. They seem rather to be, as they have previously been called here, "responses" to only half-understood northern influence and to have stopped short of southern Puget Sound.

Contacts were also established along the Pacific Coast by travelers from the north. A second stream of northern influence toward semi-realism may, therefore, have journeyed along the Pacific coast and up the Columbia River and be at least partially responsible for the painted grave boards at the Dalles. It is to be noted, however, that anthropomorphically painted boards are mentioned by Scouler. Types similar to the anthropomorphic Nisqually shaman boards may here have been used as grave boards. Apparently the use of grave boards was more general at the Dalles than the practice of painting semi-realistic animals upon them. Grave boards were used in the north by the Nooksack and Fraser River people. They were not used by any of the other people of our region. Unfortunately, it is not clear how the northern grave boards were decorated.

All grave boards in our area, however, would probably be freighted with religious implications.

The dominant art interest of the Columbia-Fraser region was in anthropomorphic figures, and these, as well as the carved animal or bird heads sometimes used (see poles in Plate 11, D), were highly conventionalized. Many of these became so stylized that they were almost entirely geometric in form but they remained completely anthropomorphic in concept. The best known examples were the large drumming sticks of southern Puget Sound[29] and the skwedilitch boards of the northern Sound.[30] A ceremonial object of this sort was the seat of great supernatural power. It could be used at the will of its owner to confound sceptics, to run with them till they were exhausted, to drag them through fires, to carry them out into the Sound. Stories are told of men who were drowned when the great animated drumming sticks pulled them into deep water. At other times such objects were the seats of a power which acted without the volition of their owners; they moved; they talked; they "wanted to play." The drumming stick was anthropomorphic in concept whether one end was carved as a human head or not. The skwedilitch board was painted with splotches of solid color, it was shaped but not carved—it was nonetheless active and powerful.

The power boards were equally anthropomorphic in concept. And it is impossible not to put Kaiyama, who confounded the sceptical priest, in the same category. The artistic interest could be satisfied by extremely simple lines giving the merest suggestion of living form but the observer knew the objects to be dynamically motivated. As has been seen, petroglyphs of similar, simple line occur in Utah. So far as I know, similar forms do not occur to the north. The Utah petroglyphs are prehistoric; the power boards were used in the historic period; Kaiyama, or the Little Doctor, receives donations today. These apparently represent an artistic-religious complex of prime significance to the Coast Salish, of considerable antiquity, and of southern affiliation.

Petroglyphs of Type I remain to be discussed. They are highly conventionalized and frequently anthropomorphic. The basic design element is the circle or the circle (or dot) within a circle. In the southern part of our region, religious meaning is consistently denied to petroglyphs of Type I, and decorative or non-religious designs based upon the circle and dot appear in the historic period on small objects of bone. Circle and dot designs are widespread along the coast and to the north. Smith and Spier report circle and dot designs from

29 Smith, *Puyallup-Nisqually*, pp. 113, 118.

30 Haeberlin and Gunther, *Indians of Puget Sound*, Plate 1, b; Smith, *Puyallup-Nisqually*, p. 114; *Coast Salish*, p. 205; Waterman, *Paraphernalia*, p. 544, Fig. 147.

Alaska to northern California and concluded from their study that the design "is more clearly characteristic of the Indians of the Northwest" than of the far north.[31] Cressman reports a curvilinear petroglyph style from southeastern Oregon.[32] This southeastern Oregon style is, however, combined with naturalistic and rectilinear designs and is particularly deficient in large anthropomorphic figures. It is, indeed, quite impossible to confuse it with our distinctive Type I. Since the curvilinear Oregon style seems not to occur in the Columbia-Fraser region its only interest for us is to document the presence of another curvilinear petroglyph style in the area of the circle and dot design distribution.

Petroglyphs of Type I at the Dalles are designated by Strong and Schenck as "apparently more ancient" than those of Type II. They have also been related to a late prehistoric art style, found on small bone or stone plaques known only archaeologically and in the general Dalles and middle Columbia area, the favorite motif of which, as in the petroglyphs, is anthropomorphic. Although it is clear that both petroglyphs and bone incising were regarded as purely decorative in the southern part of our region in the historic period, the situation is not so clear for this older material. Petroglyphs in southern Puget Sound were attributed in part to "long ago" Indians. The problem becomes one of assigning meaning to archaeological materials. The strong tendency toward anthropomorphism suggests our widespread religious complex. Yet the artistic style is quite different. The fact that the plaques were perforated and were apparently worn would lead toward a belief in their purely decorative character, for costume is seldom of the primary religious interest in our region that it is in classical Northwest Coast. The style also appears on a mortar. I know of no single instance in this whole area where a receptacle, dish, or mortar holds important religious significance. Until more is known of the archaeological culture of the middle Columbia, it seems best, therefore, to regard the Dalles petroglyphs and art styles as decorative rather than religious.

The anthropomorphic, circle-motif petroglyphs (Type I) and the related art style have been said to bear certain resemblances to highly developed Northwest Coast conventional art. Objects of Northwest Coast manufacture, especially whale bone clubs with conventionalized human or bird heads, have been found archaeologically along the middle Columbia. There are no indications that travelers from the areas of classical Northwest Coast reached this region, so one assumes the clubs were trade objects. They could have passed by either of the two main trade routes, the first of which has already been suggested as a sec-

31 Smith and Spier, *Dot and Circle Design*, p. 47.
32 Cressman, *Petroglyphs of Oregon*, pp. 70-71.

NORTH-SOUTH DISTRIBUTION OF PETROGLYPH COMPLEXES

	Complex I *Circle motif* *Decorative*	*Complex II* *Semi-realistic* *Decorative*	*Religious*	*Complex III* *Anthropomorphic* *Religious*
Harrison Lake				petroglyph, etc. (grave boards)
Northern Puget Sound			"totem pole" house posts	skwedilitch, etc.
Central Puget Sound	petroglyph bone incising		painting on house boards	skwedilitch power boards drumming sticks, etc.
Southern Puget Sound	petroglyph bone incising			drumming sticks, etc. shaman boards
Dalles of Columbia River	(petroglyph) (bone and stone art)	(petroglyph)	(grave boards)	grave boards, etc.
Utah		petroglyph		petroglyph

ondary route for transmission of a possible northern influence toward semi-realism: (1) Canoes are known to have made the journey along the Pacific coast from Vancouver Island to the mouth of the Columbia River, and the Lower Chinook bore marked signs of this contact. Trading was usual along the Columbia: objects of Northwest Coast manufacture could easily have passed upriver. (2) Contacts also reached from the eastern side of Vancouver Island to the Fraser River and from its upper drainages overland to the Columbia. This is a long circuitous route, but trade could be carried out completely by village-to-village exchange. I suspect this route between classical Northwest Coast and the middle Columbia to be the older of the two. If study of the Columbia Valley art style bears out a relationship between it and Northwest Coast, the contact may well have been established through trade objects and through these alone. Petroglyphs of Type I, therefore, may have developed out of some older circle-and-dot style in response to an artistic stimulus received from northern trade objects. Such a derivation of middle Columbia art would likewise tend to substantiate its purely decorative character.

The accompanying table has been drawn up to make our reconstructions more readily available. For purposes of clarity the important artistic-religious complex has been labeled Complex III, and the first descriptions of Types I and II, which have now been considerably expanded, have been called respectively Complexes I and II. Traits in parentheses in the table indicate those about which the situation is least clear. The complexes as discussed may now be summarized:

Complex I is a decorative complex based upon the circle-motif, including petroglyphs and work on small objects of wood, bone, and stone. It is historic in central and southern Puget Sound except possibly for the petroglyphs, which may belong with the late prehistoric aspect of the complex as it appears at the Dalles. This more ancient aspect includes rather striking anthropomorphic figures and may tie with Complex III. The bulk of evidence indicates, however, that it had no significant religious ties.

Complex II covers the semi-realistic representation of animal figures and apparently has two aspects, in one of which the figures had religious meaning while in the other they did not. The decorative aspect probably came from Nevada and Utah, reaching Oregon in the period after the introduction of the horse and not extending much farther north than the Dalles. The religious aspect arose in the historic period probably through a misinterpretation by the Coast Salish of northern ceremonial and art forms.

Complex III is found throughout the Columbia-Fraser region and shows

development into numerous highly specialized localizations. It has affiliations inland and to the south which are apparently prehistoric. It is strongly anthropomorphic, involving an essentially simple outline form, which ties with the deepest religious beliefs of the Coast Salish.

In conclusion we may say that a basic religious-artistic complex with apparent southern affiliations was affected locally and in a late period by an artistic semi-realism of northern derivation. A decorative complex based on circles and dots can also be distinguished but cannot be related to the religious-artistic complex.

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COLUMBIA UNIVERSITY
NEW YORK, NEW YORK

SPIRIT POSSESSION IN NATIVE AMERICA[1]

KENNETH M. STEWART

FOR SOME YEARS spirit possession was considered a phenomenon alien to the cultures of the American Indians. Boas, curiously enough, contributed to this misconception with the following statement:

> Belief in obsession is a most characteristic form of belief in the Old World. On the other hand, it seems quite foreign to the ideas of the American tribes. Ideas of personal contact between man and the supernatural beings are quite frequent, but with it obsession and the various forms of exorcism do not seem to occur. The spirits may attack man, but they do not seem to enter his body.[2]

The term "obsession," as used by Boas, is obviously the equivalent of "possession," but it is not clear from the above quotation whether Boas is referring to the inspirational form of possession or to possession as a cause of disease. In either case, his statement is inaccurate, inasmuch as numerous instances of spirit intrusion are to be found in the literature,[3] and Boas had himself previously described instances of inspirational possession in his own ethnographical publications.[4] If Boas meant demoniacal possession specifically, his stand is more intelligible, since that concept is indeed all but absent in the

1 To conserve space bibliographical information in this paper has been condensed and a terminal bibliography has not been included. The following abbreviations are used in references to series of publications: AA—American Anthropologist; AAA-M—American Anthropological Association-Memoirs; AMNH-AP—American Museum of Natural History-Anthropological Papers; AMNH-B—*idem*-Bulletin; AMNH-M—*idem*-Memoirs; BAAS—(Reports) British Association for Advancement of Science; BAE-B—Bureau of American Ethnology-Bulletin; BAE-R—*idem*-(Annual) Reports; CUCA—Columbia University Contributions to Anthropology; ICA—International Congress of Americanists (Comptes Rendus, Proceedings); JAFL—Journal of American Folklore; JSAP—Journal, Société des Américanistes de Paris; JRAI—Journal, Royal Anthropological Institute; MAIHE-IN—Museum of the American Indian, Heye Foundation-Indian Notes; SI-AR—Smithsonian Institution-Annual Reports; UC-AR—University of California-Anthropological Records; UC-IA—*idem*-Ibero-Americana; UC-PAAE—*idem*-Publications in American Archaeology and Ethnology; UPM-AP—University of Pennsylvania Museum-Anthropological Publications; UW-PA—University of Washington Publications in Anthropology; YU-PA—Yale University Publications in Anthropology.

2 Boas, ICA 21: 27.

3 Clements, UC-PAAE 32: 216 ff.

4 Boas, *Annual Archaeological Report Ontario* [for] *1905:* 246: "Among the Kwakiutl the ritual consists in the initiation of the novice, and the exorcising of the spirit which possesses him." Boas, BAAS 60: 617: "Others, in dancing, keep their hands pressed against the belly to keep back the spirits which are supposed to dwell in the belly."

New World, although a few instances have been discovered and will be cited in this paper.

Later writers brought to light a minimum of occurrences of possession, but did not succeed in discovering the extensive bi-continental distribution of the concept. Loeb in 1929 recognized possession among the Eskimo and on the Northwest Coast, but denied its existence for the remainder of the Western Hemisphere.[5] Osterreich, in his general work, *Possession, Demoniacal and Other,* mentioned possession in Venezuela and among the Kwakiutl.[6] Clements in 1932 described possession as occurring on the Northwest Coast and among the Eskimo, with a single instance in South America.[7] Dr R. H. Lowie, who suggested the present study, was the first to indicate that possession might be more common in America than hitherto recognized, and he cited three previously unnoticed examples in South America.[8]

Since the term "possession" appears in the ethnological literature with rather variable connotation, it was deemed advisable, for purposes of this paper, to adopt as generally recognized a definition as possible. The definition given in Hastings' *Encyclopedia of Religion and Ethics* is in agreement with the customary usage of the term. Briefly, possession is defined as the "temporary embodiment of an influence or spirit alien to the subject."[9]

A distinction must be made at the outset between two fundamental types of possession—possession, or spirit intrusion, as a cause of disease, and the inspirational form of possession, with which this paper is mainly concerned. The essential concept of inspirational possession is the belief that a spirit or other supernatural power has entered the body of the person, and controls, to a greater or lesser degree, the actions of the host. The existence of the person is temporarily dominated by the spirit, and the words and actions are believed to be those of the intrusive power.

Demoniacal possession should perhaps be properly regarded as a specialized form of spirit intrusion, since, without invocation, the evil spirit takes up his residence in the body of the host, makes him ill and causes him to conduct himself in a violent manner, and must be exorcised before the host can return to his normal state. Inspirational possession, in contrast, is intimately linked up

5 Loeb, UC-PAAE 25: 266; Loeb, AA 31: 62.

6 T. K. Osterreich, *Possession, Demoniacal and Other* (New York, 1930): 286 ff.

7 Clements, *op. cit.:* 224.

8 Lowie, AA 42: 423.

9 Hastings, *Encyclopedia of Religion and Ethics,* vol. 10, p. 122. The embodiment is not always "temporary," inasmuch as in some indubitable instances of possession, the spirit dwells permanently within the body of the host.

with shamanism, and it is usually the shaman who voluntarily calls up a tutelary spirit to possess him, with the aim of divining, curing disease, or performing some other shamanistic function.

The delimitation of the scope covered by the term "possession" has been a matter of some controversy. Clements, for example, has included under the heading of possession only those cases in which the spirit actually speaks through the host.[10] This, however, may be merely symptomatic of possession rather than essential to it. There are various other symptoms of the presence within the body of an alien power, including numerous abnormal physical and psychical manifestations. The reactions of an epileptic, for example, are frequently attributed to a possessing spirit. Examples of these symptoms include violent bodily and facial contortions and hysterical shriekings. Frenzied actions and trance-like states are commonly attributed to possession. In some cases blood gushes from the mouth of the possessed and he evinces uncontrollable spastic movements. In certain cases in which the spirit is believed to speak through the mouth of the possessed a foreign language is employed.

In delimiting the concept it matters little whether the manifestations of possession are in reality due to physical or psychical abnormalities or whether they are artificially induced by auto-suggestion. The essential factor in possession is the belief that a person has been invaded by a supernatural being and is temporarily beyond self-control, his ego being subordinated to that of the intruder.

As Parsons has indicated, it is sometimes difficult to differentiate between possession, transformation, and impersonation.[11] For this reason, only such cases of metamorphosis and representation of supernaturals as may be specifically attributed to the presence within the body of an alien power will be classed as possession in this study.

Eskimo

Inspirational shamanism appears to occur generally among the Eskimo. A composite picture of the typical Eskimo possession rite is the following. The familiar spirits of the shaman are conjured up by singing and drumming. The soul of the shaman then departs from his body, which becomes posssessed by a familiar spirit or by a succession of familiars. While inspired by the spirit, the shaman is in an ecstatic condition; his features and body are contorted, and he shrieks in horror. He assumes to a certain extent the characteristics of the spirit, imitating its voice and actions. The spirit speaks through the shaman's

10 Clements, *op. cit.*, p. 189.

11 E. C. Parsons, *Pueblo Indian Religion* (Chicago, 1939), p. 350.

mouth, employing a special "spirit language," which in some cases consists of obsolete and metaphorical Eskimo words. In case the shaman is possessed by an animal spirit, the characteristic cries of the animal are imitated.[12]

It is noteworthy that most of the features of the Eskimo possession rites have also been reported for Siberia, but certain of the Alaskan Eskimo instances of possession are somewhat aberrant, with a suggestion of Northwest Coast influence, particularly in the concept of a shaman becoming imbued with the spiritual essence of a mask.

The following Eskimo instances of possession have been discovered:

Angmagsalik—Thalbitzer, ICA 16: 455 ff.; Holm, Meddelelser om Grönland 39: 88 ff.

West Greenland—Birket-Smith, Meddelelser om Grönland 66: ff.; D. Crantz, *A History of Greenland* (London, 1867) 1: 194 ff.

Polar Eskimo—K. Rasmussen, *The People of the Polar North* (Philadelphia, 1908): 16 ff., 150, 153 ff.

Baffinland Eskimo—J. W. Bilby, *Among Unknown Eskimo* (London, 1923): 198 ff., 213 ff.

Labrador Eskimo—Hawkes, Memoir, Geological Survey of Canada, no. 91, Anthropological Series, no. 14: 46 ff.

Iglulik—Rasmussen, *Report of the Fifth Thule Expedition* 7, no. 1: 35 ff.

Netsilik—Rasmussen, *Report of the Fifth Thule Expedition* 8: 294 ff., 297.

Copper Eskimo—Jenness, *Report of the Canadian Arctic Expedition, 1913-18* 12: 191 ff.; D. Jenness, *The People of the Twilight* (New York, 1928): 51 f.; Stefansson, *Summary Report of the Geological Survey of Canada, for the Calendar Year 1912:* 495; Rasmussen, *Report of the Fifth Thule Expedition* 9: 28, 32.

Mackenzie River Eskimo—Stefansson, AMNH-AP 14: 371 ff.; V. Stefansson, *My Life With the Eskimo* (New York, 1919): 412 f.

Alaskan Eskimo—Hawkes, UPM-AP 6: 17; Porter, *Eleventh Census of the United States* 8: 139; Nelson, BAE-R 18: 399; E. M. Weyer, *The Eskimos* (New Haven, 1932): 440; H. R. Thornton, *Among the Eskimos of Wales, Alaska* (Baltimore, 1931): 102 f.; W. H. Dall, *Alaska and its Resources* (Boston, 1870): 144; K. Birket-Smith, *The Eskimos* (London, 1936): 173; Petroff, *Tenth Census of the United States* 8: 218, 222, 254.

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12 Rasmussen has described an instance of demoniacal possession among the Netsilik. A man became violently possessed, involuntarily, and ran around frothing at the mouth and shouting like a madman until he was subdued by several strong men. There is also an account of insanity caused by possession. A man had made certain advances toward a shaman's wife, whereupon the shaman caused him to be possessed by one of his attendant spirits, with madness resulting (Rasmussen, *Report of the Fifth Thule Expedition* 8: 294 ff., 297).

Northwest Coast

Possessional shamanism occurs along the greater portion of the Northwest Coast, but is perhaps most highly developed among the Tlingit. The Tlingit shaman has several familiars, for each of which there is a special mask. When the shaman dons a mask it is believed that he becomes possessed by the spirit represented, and the utterances of the shaman are for the time being regarded as the words of the spirit. At the winter performances the shaman invokes his familiar spirits by drumming, singing special spirit songs, and dancing around the fire. His actions gradually become more and more convulsive and his eyes are distorted. Suddenly he stops, fixes his gaze on the upper side of the drum, and cries aloud. The Tlingit believe this to be the moment of inspiration, and the shaman's ensuing utterances are regarded as those of the spirit. To quote Krause: "Sogleich verstummen Trommel und Gesänge, und aller Augen sind auf den Schamanen gerichtet; denn aus ihm spricht der Geist, der in ihn gegangen ist."[13] By changing his mask the shaman may be possessed by another spirit.

Farther south on the Northwest Coast possessional shamanism is of less importance and the possession rites of the secret societies become prominent, reaching their climax among the Kwakiutl. At the initiation ceremonies and other rites of the secret societies, novices and members are possessed by spirits, who speak and act through them. The belief in possession of laymen as well as shamans by guardian spirits is the most characteristic form among the Coast and Puget Sound Salish, and midwinter spirit singings replace the more elaborate winter ceremonials of the secret societies. Possessional shamanism was known in Oregon, being reported for the Kalapuya, Santiam, and Takelma.

Southwestern Oregon and adjacent northwestern California present what may be a specialized and localized form of possession, namely the "pain" concept, which reaches its most typical form in northwestern California. Kroeber describes it for the Yurok:

> Shamanistic power resides in the control of "pains," small animate, nonanimal and nonhuman in shape, which on the one hand cause illness by entering the bodies of men, and on the other, endow the shaman with power when he brings them to reside within himself.[14]

While the typical northwestern Californian does not conceive of the pain itself as a spirit, the pain represents, at any rate, spiritual power, and it agrees with our definition of possession in that it is the embodiment of an influence

13 A. Krause, *Die Tlingit-Indianer* (Jena, 1885), p. 289.
14 Kroeber, BAE-B 78: 3 f.

alien to the subject. Various manifestations of possession are linked with the pain concept in certain tribes, including bodily contortions and frenzied actions, and a bleeding at the mouth with a lapse into unconsciousness upon the original acquisition of power. Nomland's account of the performance of a Bear River shaman is particularly suggestive of possession,[15] and Barnett reports that the shaman is empowered by a seizure while curing among a number of Oregon coast tribes.[16]

The following are Northwest Coast instances of possession:

Tlingit—Krause, *Die Tlingit-Indianer:* 284 ff.; Dall, *Alaska and its Resources:* 426 ff.; H. J. Holmberg, *Ethnographische Skizzen über die Völker des russischen Amerika* (Helsingfors, 1855): 72 f., Petroff, *Tenth Census of the United States* 8: 278 f.

Haida—Swanton, AMNH-M 8: 40; Dawson, *Geological Survey of Canada, Reports of Progress for 1878-79:* 120B; Dall, BAE-R 3: 106, 110.

Tsimshian—J. W. Arctander, *The Apostle of Alaska* (New York, 1909): 92; Boas, BAE-R 31: 474, 558; Garfield, UW-PA 7: 294, 313.

Kwakiutl—P. Drucker, *Culture Element Distributions: Northwest Coast* (ms.); Boas, *Annual Archaeological Report, Ontario* [for] *1905:* 245 f.; Beckwith, ICA 15: 101 f.

Bella Coola—Boas, AMNH-M 2: 118 ff., 143.

Bella Bella—T. Crosby, *Up and Down the North Pacific Coast by Canoe and Mission Ship* (Toronto, 1914): 319 ff.; Boas, BAE-R 31: 546.

Nootka—Drucker, *op. cit.*; Sapir, AA 11: 20 ff.

Makah—E. Gunther, *Culture Element Distributions: Puget Sound* (ms.); Dall, *op. cit.*: 108 ff.

Quileute—Frachtenberg, AA 23: 321, 340.

Quinault—Olson, UW-PA 6: 160, 171 ff.

Coast Salish of Canada—Barnett, AA 40: 136; Barnett, UC-AR 1: 270.

Klallam—Gunther, UW-PA 1: 283, 301 f.

Duwamish—Waterman, MAIHF-IN 7: 558 f.

Puget Sound Salish—Haeberlin and Gunther, UW-PA 4: 61; Gunther, *Culture Element Distributions: Puget Sound.*

Lummi—Stern, CUCA 17: 75 ff., 86 f.

Wishram—Spier and Sapir, UW-PA 3: 241.

Lower Chinook—Ray, UW-PA 7: 90.

Kalapuya and Santiam—M. Jacobs, *Culture Element Distributions: Kalapuya* (ms.).

Takelma—Sapir, JAFL 20: 48.

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15 Nomland, AA 33: 34. 16 Barnett, UC-AR 1: 191.

"Pain" concept—Kroeber, BAE-B 78: 3 f., 422; Barnett, UC-AR 1: 191; Driver, UC-AR 1: 362; Voegelin, UC-AR 7: 155; Dixon, JAFL 17: 25; Gifford and Kroeber, UC-PAAE 37: 156; T. Garth, *Atsugewi Ethnography* (ms.); de Angulo, Anthropos 23: 568 f.

California

Several additional instances of possession have been reported for California proper. The Sinkyone shaman was believed to have dwelling within him a spirit which entered him at his original acquisition of power.[17] Wailaki shamans were believed to become possessed by bear spirits,[18] as were the shamans of the Kato, Lassik, and Yuki.[19] The Wintu shaman was possessed while curing,[20] and Loeb has described what he terms the "semi-possession" of neophytes in the Patwin wai-saltu ceremony.[21] Harrington reports possessional shamanism for the Chumash and Serrano.[22]

Plateau

Possession was common among the Plateau tribes. The Thompson River shaman's guardian spirit entered the shaman's chest when summoned, and enabled him to determine the cause of illness.[23] The embodiment of a spirit is not specifically mentioned for the Shuswap and Lillooet, but the accounts of shamanistic performances are distinctly suggestive of possession.[24] The Kootenay shaman became possessed while curing, and on a guardian spirit quest the spirit entered the body of the novice.[25] The Southern Okanagan held the belief that a man's guardian spirit was resident in his chest or heart, and spoke through the man's mouth.[26] Colville, Flathead, Kalispel, Spokane, and Coeur d'Alene held a belief in possession by Bluejay spirits.[27] The Sanpoil and Nespelem believed that novices became possessed at the midwinter guardian spirit dances, and that a shaman might cause insanity by projecting one of his guardian spirits into the body of an intended victim. The possessed person became delirious and talked like the shaman who had sent the spirit.[28] The Umatilla also believed

17 Nomland, UC-PAAE 36: 168.
18 Loeb, UC-PAAE 33: 85.
19 Essene, UC-AR 8: 44.
20 Voegelin, UC-AR 7: 155.
21 Loeb, *op. cit.*: 85; Kroeber, UC-PAAE 29: 298, 316.
22 Harrington, UC-AR 7: 39.
23 Teit, AMNH-M 2: 362.
24 Boas, BAAS 60: 646; Teit, AMNH-M 4: 615.
25 Teit, AMNH-M 4: 298.
26 L. Spier, ed., *The Sinkaietk or Southern Okanagon of Washington* (General Series in Anthropology, no. 6, 1938): 133.
27 Spier, *op. cit.*: 133, 150; Teit, BAE-R 45: 293; Turney-High, AA 35: 104 f.; Turney-High, AAA-M 48: 39; Ray, AA 39: 597 ff.
28 Ray UW-PA 5: 186 ff., 192, 202.

in possession by guardian spirits at the midwinter dances,[29] and Spinden's account of the Nez Percé is indicative of a similar form of possession.[30]

Klamath possession concepts align with those of the southern Plateau and Puget Sound tribes, in that midwinter was the season for repossession by guardian spirits.[31] The Klamath shaman was possessed while performing, the spirit acting and speaking through him.[32] The Modoc shaman was likewise possessed while curing.[33]

Basin

In the Basin proper possessional shamanism has been reported only for the Shivwits Paiute.[34] The Shivwits instance is in the extreme south of the Basin, in proximity to the Walapai and Havasupai, and may conceivably be connected with the Yuman instances. The intensive Culture Element Distribution surveys of Stewart and Steward report possession nowhere in the Basin, nor is the concept treated in Park's analysis of shamanism; hence it seems likely that possession was unknown to the Basin peoples.[34a]

Southwest

Possession has been described less commonly for the Southwest than for the areas to the north. It has been definitely reported for several Yuman-speaking tribes, but it is by no means universal among members of that linguistic stock. Forde has stated that a spirit enters the Yuma shaman when he is curing, and speaks through the shaman.[35] The Walapai shaman is also possessed,[36] and the Havasupai believe that a spirit resides within the chest of every shaman and talks and sings through the mouth of the host.[37] The shamans of the Kiliwa and Paipai in Lower California are reported to have become possessed during the ceremony of Ñiwey, or "talking with the dead."[38] Kroeber describes possessional shamanism for the Seri of the island of Tiburon, in the Gulf of California.[39]

29 Ray, UC-AR 8: 251.
30 Spinden, AAA-M 2: 262 f.
31 Spier, UC-PAAE 30: 123 ff.
32 *Idem*, 109, 133, 123 ff.
33 Voegelin, UC-AR 7: 155.
34 Drucker, UC-AR 6: 160.
34a Stewart, UC-AR 6: 315 ff.; Stewart, UC-AR 4: 412 ff.; Steward, UC-AR 4: 320 ff.; W. Park, *Shamanism in Western North America* (Northwestern University Studies in the Social Sciences, no. 2, 1938).
35 Forde, UC-PAAE 28: 184.
36 Kroeber, AAA-M 42: 189.
37 Spier, AMNH-AP 29: 286 ff.
38 Meigs, UC-IA 15: 54 ff.
39 Kroeber, Southwest Museum Papers 6: 13.

Gifford reports the Huachuca Apache (Chiricahua) belief that shamans are possessed by bear spirits, a concept lacking among other Apache.[40] An old Navaho was also believed to have the spirit of a bear in his body.[41]

The so-called "hand-trembling" ceremony of the Navaho appears to be a localized and specialized form of inspirational possession, in that the motion or shaking of the hand is attributed to a spirit having entered it. The Gila monster spirit controls the hand-trembling and is prayed to by the diagnostician who wishes information. The diagnostician can pass into a trance, during which the spirits make known to him the nature of the disease and the appropriate cure. The hand-trembling faculty is not inherited, but comes upon someone suddenly; for example, someone at a diagnosing chant may begin to shake and is thereupon recognized as a diagnostician. It was said of a certain diagnostician: "The spirit simply entered him, and that is the way he got it, by way of the spirit."[42]

The essential feature of possession is present among the Pueblos in that the kachinas are believed to come in spirit to invest the dancers. Beals states in this regard: "While wearing the mask, the person impersonating the kachina becomes for the time being the actual embodiment of the spirit which is believed to reside in the mask."[43] At Zuñi: "The power of katchina ceremonies resides in the masks which . . . are believed to contain divine substances by means of which the katchina whose representation is worn 'makes himself into a person'."[44] White reports that the K'atsina or spirit rainmakers, come and possess the masked dancers at Acoma.[45] At the pueblo of Santo Domingo: "However, when the men sing and dance like Shiwana, these supernaturals invest the bodies of the dancers with their spirits, so for the duration of the dance they 'really are the shiwana'."[46] To quote Dumarest on Cochiti: "They think that in putting their sacred mask on their head they take on the holy personality. They think that the spirits of the shiwana are in these masks and that they thus visit the pueblos."[47]

The rites of the cult of the Beast Gods, at Zuñi, as described by Bunzel, bear a strong resemblance to séances among other peoples in which the shaman is

40 Gifford, UC-AR 4: 75.
41 Morgan, YU-PA 14: 37.
42 Wyman, JAFL 49: 136.
43 R. Beals, *Preliminary Report on the Ethnography of the Southwest* (National Park Service, Berkeley, 1935): 40.
44 Bunzel, BAE-R 47: 844 f.
45 White, BAE-R 47: 69.
46 White, AAA-M 43: 38.
47 Dumarest, AAA-M 6: 135.

inspired, in that the Beast Gods are summoned by dancing, rattling, and drumming, and the dancers work themselves into a frenzied condition in which they imitate the actions and cries of animals.[48]

White's monograph on San Felipe contains certain indications of a belief in possessional shamanism. The medicine-men who have Bear as their guardian, from whom their power is derived, draw on bear paws and go out to recover the patient's heart from the witches who have stolen it. "Finally the medicine men return to the house with the heart. When they come in they behave in a very violent manner. 'They want to rush out of the house. They act like they're crazy.' Sometimes they lose their senses and fall down in a state of coma. Sometimes they vomit blood."[49]

Eastern United States

Instances of possession for the eastern United States have been discovered, but they are few. In part this may be due to the meagerness of the ethnographical literature. For the Southeast there is no specific mention of the actual embodiment of a spirit, but certain features of possessional shamanism were present among the Natchez, since the shaman invoked a spirit by shaking a rattle, whereupon he went into a convulsion, to the accompaniment of fanatical howling.[50] The Creek shaman also had frenzied and abnormal reactions after the invocation of a spirit.[51]

Lederer, who traveled among the Eastern Siouans in 1669, speaks of "possession," but his statement is vague and cannot be accepted with any degree of finality, since few details are given.[52]

During certain Lenape ceremonies a mask and a bearskin costume were worn by a performer, who was believed to become imbued with the spirit when the mask was donned.[53] Also, the missionary Heckewelder has described a Lenape shamanistic performance in which certain manifestations of possessional shamanism are discernible.[54]

Inspirational possession was known among the Iroquois, chiefly in connection with the shamanistic or medicine societies, each of which was organized to pro-

48 Bunzel, *op. cit.*: 531 f.

49 White, AAA-M 38: 47.

50 Swanton, BAE-B 43: 178 f.; J. Adair, *History of the American Indian* (London, 1775): 184.

51 Swanton, BAE-R 42: 616.

52 J. Lederer, *The Discoveries of John Lederer* . . . (Rochester, 1902): 8: "They believe in the transmigration of souls, for the angry they say is possessed with the spirit of a serpent; the bloody with that of a wolf; the timorous of a deer; the faithful of a dog, etc. . . . "

53 Harrington, AA 15: 45.

54 Heckewelder, Memoirs of the Historical Society of Pennsylvania 12: 232.

pitiate a particular class of supernatural beings with the objective of curing disease. The performances of the Seneca Falseface society were featured by masked impersonations of the Falsefaces, supernatural beings who were believed to imbue the performers with their power.[55] A Seneca shamanistic society with an exclusively feminine membership, the society of Otters, had the ostensible purpose of propitiating the otters and other water animals.

> When possessed with the spirit of the otter, the women are said to be unaware of their actions, and sometimes, when they are particularly zealous, the whistle of the otter is heard. This greatly frightens the people, who regard it as the manifestation of the presence of the "great medicine otter." The women afterward deny having imitated the otter's call, saying that they were possessed by the otter and had no knowledge of what they did.[56]

Lewis H. Morgan has reported the Iroquois belief that witches were possessed by evil spirits.[57]

Several specific instances of possession have been described for the Menomini. Among them is the Private Memorial Ceremony, held one year after a funeral in honor of the dead. The spirit of the deceased is recalled and temporarily inhabits the body of an individual who has been chosen to represent the departed. The impersonator is believed to be animated by the spirit of the deceased, and his words are regarded as those of the spirit.[58] Hoffman's description of a Menomini séance furnishes additional evidence of a belief in possession,[59] and the Menomini also believed that on the spirit quest a living animal, such as a sturgeon, a minnow, or a mud-turtle, might take up its residence in the body of a person. "This was the guardian power, which had made itself smaller in order to enter the faster, to live there, and with its enchanted power to make him strong."[60]

Plains

Several sources present evidence that the Dakota held a belief in possession. Dorsey, in his study of the Siouan cults, said:

> Such doctors pretend to have within them one of the following: a small red hawk, a common woodpecker, a rattlesnake or a grizzly bear. And when one of these doctors kicks on the ground, there is heard something within him, singing in a beautiful voice, and so the people believe what these doctors say about diseases.[61]

When a Dakota doctor attempted to cure by sucking, he invoked the "mysterious being dwelling within himself, and then that being cries out often," with the

55 Skinner, MAIHF-IN 2: 199.
56 Parker, AA 11: 171.
57 L. H. Morgan, *League of the Ho-de-no-sau-nee, or Iroquois* (New York, 1904): 156.
58 Skinner, MAIHF-INM 4: 117 f.
59 Hoffman, BAE-R 14: 86.
60 Skinner, AMNH-AP 13: 42.
61 Dorsey, BAE-R 11: 495.

result that the curing is successful.[62] Gideon Pond, writing in 1860, said of the Dakota shaman:

> It is believed that they have in their bodies animals (gods), which have great powers of suction, and which serve as suction pumps, such as the lizard, bullfrog, leach, tortoise, garter-snake, etc. Other gods confer on them vocal powers, and their chants and prayers are the gifts of inspiration. If the doctors are long without practise, they suffer from the restlessness of the gods within them. . . .[63]

Lowie's description of the Crow batsirape concept agrees with our definition of possession as the embodiment of an influence or spirit alien to the subject, although in this case the embodiment is permanent rather than temporary.

> The batsirape is a mysterious animal or an inanimate object that dwells within a person's body, emerges on some definite stimulus, in most cases must be made to go back, unless its host, who at once goes into a trance, is to come to grief.[64]

The resemblance of the batsirape to the previously-mentioned beliefs in indwelling animals among the Menomini and Dakota is apparent, and Maximilian described for the Mandan and Hidatsa what is evidently a parallel to the Crow batsirape concept,[65] as did Shimkin,[66] and earlier Olden,[67] for the Wind River Shoshoni.

Subarctic Areas

Possession appears among many of the Indians in the northernmost regions of North America. Morice attributes the belief to the Western Déné in general,[68] and his account of a shamanistic rite is strongly reminiscent of Eskimo instances. Whymper has described possession for the Koyukon Indians of Alaska,[69] as has Jetté for the Ten'a.[70] While Birket-Smith and De Laguna do not specifically mention possession for the Eyak, their account of Eyak shamanism presents many of the recognized manifestations of possession.[71] The characteristics of pos-

62 *Ibid.*

63 G. H. Pond, *Power and Influence of Dakota Medicine Men* (in *Archives of Aboriginal Knowledge*, H. R. Schoolcraft, ed., Philadelphia, 1869) 4: 649.

64 R. H. Lowie, *The Crow Indians* (New York, 1935): 264.

65 In R. G. Thwaites, ed., *Early Western Travels, 1748-1846* (Cleveland, 1904-1907) 23: 343.

66 D. B. Shimkin, *Some Interactions of Culture, Needs, and Personalities among the Wind River Shoshone* (Ph.D. thesis, University of California, ms.): 80.

67 S. Olden, *Shoshone Folk Lore* (Milwaukee, 1923): 27.

68 Morice, Proceedings, Canadian Institute 3: 158.

69 Whymper, Transactions, Ethnological Society of London 7: 145; see also Dall, *Alaska and its Resources:* 90.

70 Jetté, JRAI 37: 37, 158, 163, 165 f., 170, 184.

71 K. Birket-Smith and F. De Laguna, *The Eyak Indians of the Copper River Delta* (Copenhagen, 1938): 207, 209 f., 223, 232.

sessional shamanism are also present among the Tanaina, who show shamanistic parallels to the beliefs and practices of both the Eskimo and the Tlingit.[72] The Tahltan shaman is possessed while curing, and it is believed that nearly all women are possessed by an otter spirit, which dwells within the body just above the stomach.[73] The Carrier likewise have possessional shamanism,[74] and Jenness has described a belief in possession suggestive of the Northwest Coast cannibal society.[75] The Babine shaman is possessed by his familiar during an exorcistic performance.[76]

The Eastern Cree believe an idiot to be possessed by an evil spirit,[77] and the Northern Saulteaux regard an insane person as possessed.[78] No further details are given, but it is probable that the Cree and Saulteaux instances actually represent either spirit intrusion or demoniacal possession. The "Great Man," or soul-spirit concept of the Naskapi, as described by Speck, presents certain features of possession. One who has attained an extraordinary degree of control over his soul-spirit can consequently induce it to perform miracles for him, and he becomes a shaman. To a certain extent, then, the Naskapi appear to conceive of the soul-spirit as an alien being or guardian spirit dwelling within the person. The soul-spirit is invoked to strengthen it by singing, drumming, and rattling.[79] Turner's account of a Naskapi séance contains certain resemblances to Eskimo rites in which the shaman is possessed.[80]

Mexico

Of northern Mexico Beals has said: "Definite shamans with possession probably existed over much of our area. . . ."[81] He gives no specific citations on this subject, however, and I have been unable to discover any instances of possession in the literature. As Beals points out, the data on the shamanism of northern Mexico are very inadequate.

Central and southern Mexico remain unknown quantities, although there are certain indications that the concept of possession was not unknown. Johnson has described a Mazatec curing rite in which the brujo, or witch, cures by the "laying on of hands."

72 Osgood, YU-PA 16: 178 f, 181.
73 Emmons, UPM-AP 4: 111 ff.
74 Morice, *Annual Archaeological Report, Ontario* [for] *1905:* 205 f.
75 Jenness, Primitive Man 6: 15.
76 Morice, *op. cit.:* 339.
77 Skinner, AMNH-AP 9: 78.
78 *Ibid.:* 161.
79 F. G. Speck, *Naskapi* (Norman, Oklahoma, 1935): 169.
80 Turner, Transactions, Royal Society of Canada 5: 113.
81 Beals, UC-IA 2: 128.

While the brujo is under the influence of the narcotic mushroom, it is the mushroom which speaks, and not the brujo. . . . The brujo sings, dances, and prays while under the influence of the mushroom.[82]

In Seler's study of sorcerers in ancient Mexico it is mentioned that priests and sorcerers induced ecstatic states by means of tobacco and other narcotics, but there is no proof that they were possessed at this time.[83] The belief in the nagual, or personal guardian spirit, was widespread in Mexico and Central America. Metamorphosis into animal form was a prevalent concomitant of this belief, although there is no evidence bearing upon the question of whether or not the transformation was due to the actual embodiment of the nagual. The power to change into animal form was particularly the property of certain priests and sorcerers.[84]

Central America and Antilles

Possession occurs among the Black Carib, or Garif, who are not indigenous to Honduras, being the descendants of Carib and runaway Negro slaves from the Antillean island of St Vincent. The medicine man, or buye, cures the sick and acts as a medium for communicating with the spirits of the dead. Upon the death of the buye, his spirit enters the body of an individual destined to become his successor, causing him to act like a madman, or to fall ill and have visions.[85] It is difficult to determine upon the basis of available information whether the Garif belief in possession is Indian, or whether it is due to African influence. Possession occurred aboriginally among the Antillean Carib, but the presence of obeah men among the Garif suggests the possibility that the present-day concept may be of Negro origin.

Possession is present among the Sumu and Miskito in several forms. Somnambulists are said to be possessed by demons, and epilepsy is regarded as a sign of possession. The shaman is apparently possessed, and possession is also a feature of a spiritist cult which has appeared among the Christianized Miskito.[86] Here again there is a possibility that the Sumu-Miskito beliefs in possession may have originated in Africa. There is a considerable Negro population along the Mosquito Coast, many of the Negroes have intermarried with the Indians, and from time to time obeah men have settled among the Indians. On the other hand, numerous shamanistic parallels with both Mexico and South America are discernible.

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82 Johnson, Etnologiska Studier 9: 134.
83 E. Seler, *Altmexicanische Studien* (Berlin, 1899) 6: 42 ff.
84 D. G. Brinton, *Nagualism* . . . (Philadelphia, 1894): 101 f.
85 Conzemius, AA 30: 201. 86 Conzemius, BAE-B, 106: 123, 144.

The Carib medicine man of the Antilles invoked his familiars by means of incantations and tobacco smoke when he desired to function, but there is no information whether or not the spirits actually entered his body. There is, however, mention in an early account of the belief that familiar spirits entered the bodies of females and spoke through them.[87]

South America

The South American data may be briefly summarized. Koch-Grünberg has described for the Taulipang and Arekuna healing séances which coincide in all essentials. The shaman works himself into a frenzy by singing and drinking an infusion of tobacco, whereupon the shaman's soul is believed to leave his body, to be replaced by a spirit which speaks through the shaman and performs the cure.[88] A similar rite is described in detail for the Yaruro by Petrullo.[89] Shamans are also possessed in Guiana.[90] The Palikur and Uaca shamans are possessed by a succession of spirits, which sing and answer questions of spectators through the mouth of the shaman.[91] The Bororo shaman acts as a medium through which the souls of the dead can communicate with the living. The spirits possess the shaman and speak through him, and their presence is manifested by convulsive bodily movements.[92] The Tupinamba held the belief that a spirit lived in the shaman's rattle, and that it might take possession of him.[93] The Jívaro shaman becomes possessed during his initiation.[94]

To the south, Métraux has reported instances of demoniacal possession among the Matako,[95] and Dobrizhoffer has described what appears to be demoniacal possession for the Abipone.[96] The concept of possession seems also to be present among the Toba. The Toba medicine man derives his power from his guardian spirit, which he summons when he wishes to cure. The shaman shakes a rattle, chants, and dances violently. "When the dance reached its culmination, the feet of the dancer moved with an intense rapidity, the chanting developed into an inarticulate yelling, and the man seemed to have got into a

87 Roth, BAE-R 22: 473.
88 T. Koch-Grünberg, *Vom Roroima zum Orinoco* (Stuttgart, 1924): 195 ff.
89 Petrullo, BAE-B 123: 327, 247 ff., 250.
90 Roth, *op. cit.*: 340; E. F. Im Thurn, *Among the Indians of Guiana* (London, 1883): 334.
91 Nimuendajú, Gotesborg Kungl. Vetenskaps 31: 92.
92 D. A. Colbacchini, *I Boróros Orientali* (Torino, n. d. [1925]): 76 f.
93 A. Métraux, *La Religion des Tupinamba* (Paris, 1928): 72, 79, 83.
94 Stirling, BAE-B 117: 118.
95 Métraux, Etnologiska Studier 9: 109 ff.
96 M. Dobrizhoffer, *An Account of the Abipones* (London, 1822): 233 f.

state of real ecstasy."[97] The Toba also held the belief, according to Karsten, that a spirit is present in a fermented beverage, and "to be intoxicated by the drink is therefore equal to being internally filled with a spirit or spiritual power."[98]

Falkner has reported a Tehuelche belief that demons chose certain people as shamans and took possession of them. The symptoms of this phenomenon were epileptic convulsions, or seizures of falling sickness.[99] The Araucanian shaman became possessed during a séance.[100] The account of an early traveler, John Byron, suggests the possibility that the Chono were familiar with the concept of possession.[101] Finally, the shamans of both the Yaghan and the Ona of Tierra del Fuego were possessed by their guardian spirits during performance.[102]

SUMMARY

Speculations on the history of possession in the new world do not seem entirely desirable at present. We cannot be certain that all of the instances are conceptual equivalents, and, too, it must be remembered that possession is not an isolated phenomenon without functional relations with shamanism as a whole as well as with other facets of culture. The scarcity of comprehensive distributional studies of New World shamanism would necessitate at this time the methodologically incorrect procedure of treating possession as such an isolated phenomenon. However, certain suggestions will be made in the course of this recapitulation, and further research is proposed into the problem of the historical relationships of the various instances of possession in America.

In contrast to the remainder of America, spirit possession is quite general among the Eskimo, on the Northwest Coast, and in the Plateau. Conceivably, these three areas may all prove to be related. The area of distribution is relatively continuous and links with the Siberian cases of possession, and it is noteworthy that most of the features of the Eskimo possession rite have also been reported for Siberia. Thalbitzer, in fact, regards angakokism as only an offshoot of Siberian shamanism.[103] Thus, Loeb may be correct in his attribution of the Northwest Coast instances of possession to an influence coming in from Siberia

97 R. Karsten, Acta Academiae Aboensis, Humaniora 4: 69.

98 *Idem:* 116.

99 T. Falkner, *A Description of Patagonia* (Chicago, 1935): 116.

100 Gerdts-Rupp, Ibero-Amerikanischen Studien 9: 45, 236; E. Smith, *The Araucanians* (New York, 1855): 236.

101 J. Byron, *The Narrative of the Honourable John Byron* (London, 1784): 146.

102 M. Gusinde, *Die Feuerland-Indianer* (3 vols., Mödling bei Wien, 1931-1939), vol. 1, *Die Selk'nam:* 744-755; vol. 2, *Die Yamana:* 1415, 1419.

103 Thalbitzer, ICA 20: 285.

comparatively late in historical times.[104] Loeb's theory, however, fails to account for clear-cut cases of possession as far to the south as Tierra del Fuego, and it seems probable that the concept of possession is much more ancient in the New World than has been hitherto recognized.

Outside of these areas possession appears sporadically, and it occurs in varying forms which may or may not be related. The "pain" concept of northern California and southwestern Oregon may be classed as possession under the working definition, but it is distinctly localized. Possessional shamanism has been reported for a few other tribes in California, but it cannot have been at all frequent there, considering the fact that the area has been thoroughly surveyed ethnographically. The concept is apparently absent in the Basin, except for the Shivwits Paiute, who are adjacent to a cluster of Yuman-speaking peoples.

Apart from the Yumans, possession is exceptional in the Southwest, and, where it occurs, appears incongruous in the otherwise non-inspirational religions of the Pueblos, Apache, and Navaho. The few Southwest cases, too, differ considerably from the possessional shamanism of the Northwest, and the possibility of independent development must be recognized.

In the Plains, too, the concept of the derivation of shamanistic power from an indwelling animal is quite aberrant from the possessional shamanistic norm, and the question may with justification be raised whether or not we are here actually dealing with possession. The situation in the eastern United States is not clear, although the few accounts and hints of possession suffice to justify an affirmation that the concept of possession is not entirely absent.

Mexico remains largely an unknown quantity, but there are suggestions that a more intensive search of the Spanish historical literature might be productive. Possession has been noted in Central America for the Miskito, Sumu, and Black Carib, although an African influence upon these groups is conceivable. The Island Carib of the Antilles are reported to have had a belief in possession.

For South America our data, though meager, suffice to show that the belief in possession was found among widely separated tribes from Guiana to Tierra del Fuego, the Chibcha and Andean areas alone presenting complete blanks in the distribution. Here again it is possible that a review of Hispanic literature might remedy this lack of data. It is noteworthy that on both continents the gaps in distribution correspond in general to regions for which modern ethnological literature is either lacking or inadequate.

UNIVERSITY OF CALIFORNIA
BERKELEY, CALIFORNIA

104 Loeb, UC-PAAE 25: 266.

PREHISTORIC CULTURE SEQUENCE IN TRANSCAUCASIA[1]

B. A. KUFTIN; EDITED BY HENRY FIELD[2]

INTRODUCTION

THE PRESENT OUTLINE is a preliminary report of the work carried out by the Tsalka Archaeological Expedition, organized by the Committee for the Preservation of Ancient Monuments of the Board of Art of the Georgian SSR on the territory of the ancient Georgian province of Trialeti.

The possibility of carrying out excavations on a large scale was afforded by the construction on the river Khram,[3] a tributary of the Kura, of a large hydro-electric station which meant the flooding of a considerable area, thus rendering necessary rapid archaeological investigation. During 1936-1940 the Expedition collected data of great scientific importance, throwing an entirely new light on the ancient past of Georgia and of South Caucasia.

Recent excavations in Georgia, Azerbaidzhan, and Armenia have thrown new light on the cultural relationships between Transcaucasia and Eurasia.

Statements of Chantre,[4] Virchow,[5] and in some aspects those of de Morgan,[6] remain irrefutable; namely that the full metal industry in Ciscaucasia and Transcaucasia begins suddenly with the appearance of iron and that the preceding periods of development of pure bronze and copper did not exist here. Up to the present there has been hesitation in assigning beyond the lower limit established

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1 From B. A. Kuftin, *Archaeological Excavations in Trialeti—an Attempt to Periodize Archaeological Materials* (Academy of Sciences of the Georgian SSR, Tbilisi, 1941: in Russian and Georgian with a summary in English).

2 Guest of the Academy of Sciences of the USSR at the Jubilee Session of the 220th Anniversary in Moscow and Leningrad, June-July, 1945. This monograph was received from Professor Kuftin, whose daughter assisted him with the English summary. In the present report editorial revisions have been made to shorten the text. The 126 plates with the list of captions have been placed on Microfilm No. 2310 in the American Documentation Institute (1719 N Street N. W., Washington, D. C.), where copies can be purchased. The printed monograph, which has been presented to the Peabody Museum at Harvard, contains an excellent bibliography.

3 This river flows approximately west to east due south of Tbilisi (formerly Tiflis).

4 Ernest Chantre, *Recherches anthropologiques dans le Caucase* (Paris, 1885).

5 Rudolf Virchow, *Das Gräberfeld von Koban im Lande der Osseten* (Berlin, 1893) and *Über die kulturgeschichtliche Stellung des Kaukasus* (Berlin, 1895).

6 Jacques de Morgan, *Mission scientifique au Caucase* (Paris, 1889) and *La préhistoire orientale* (Paris, 1927).

for Koban, many monuments known for a long time in Georgia and South Caucasia; yet these undoubtedly belong to a more ancient stage of the Bronze Age.

Thus, there appears a contradiction; for the North Caucasus, seemingly dependent on cultural movements from the south, seems to possess an uninterrupted sequence of cultural levels from the Neolithic to the Scythian, whereas to the south of the Caucasus Mountains we have to deal only with the Late Bronze and Iron Ages.

When we examine some of the details we find that Przevorskiĭ attempted to connect the ancient painted pottery of the Jura-Araxes basin with the two stylistic groups of Elam—thus separating out two South Caucasus types—yet there was a counter tendency to join them into one late group on the basis of painted design. But the types, technically and stylistically different and of different epochs, can be easily distinguished:

(a) Tazakend type, occurring without metal in association; monochrome with an ornamental motif in the form of double axes and a border of volutes;

(b) Kizilvank I type, Middle Bronze Age; bichrome with a metopic position of the design and zoömorphic motifs;

(c) Kizilvank I *bis* type, Late Bronze Age; bichrome, with less careful painting, and other forms including jugs, kettles, and spouted vessels;

(d) Kizilvank II type, Early Iron Age; with red band painting on the lower parts of the vessel;

(e) Type found in Hellenistic jug tombs of the Milskian Steppe, etc.

Under the present author's direction a study was begun of the collections in the State Museum of Georgia at Tbilisi (formerly Tiflis). Among these were objects from tombs at Sachkhere, removed in 1910 to the Museum by Takaishvili and by him attributed to the Scytho-Byzantine epoch because of the Roman articles included among them. Subsequent excavation in ten of these tombs showed them to belong in their most essential features (the character of the metal, the form of the tubular axe butts, the flat blades, knotheaded pins, helical lock-rings, etc.) more nearly to an epoch close to the Western European station of Aunjetitz.

Since the ancient Sachkherean complex, in its separate parts, also revealed proximity to the well-known form from the entombments of North Osetia (in the *Auls* of Kumbulty, Rutkha, Faskau, etc.), usually assigned to the post-Kobanian period, it was also necessary to reëxamine the grounds for fixing this date.

The excavations by the author in the dolmens of Abkhazia during 1934 and

1937 enabled him to establish three different periods in the use of dolmens as burial chambers:

(a) The upper layer proved to be dated by coins from Colchis;

(b) The middle stratum, separated from the upper by a sterile layer of schistose clay, contained a complex of bronze objects similar to those mentioned above from North Osetia and earlier than the Kobanian forms from Abkhazia in tombs outside dolmens;

(c) The lowest stratum included copper weapons with an admixture of 5.0–10.0 percent of antimony, axes, corded ware, flat wedges representing traditional types in the first stage of metal production in the North Caucasus and related in particular to the inventory of the tumulus near Proletarskaya (formerly Tsarskaya) with dolmen tombs.

These observations assign to their chronological place these North Osetian tombs, distinct from the Kobanian. This also necessitates the reëxamination of the problem of Kobanian culture, which by its geographical extension evidently turns out to be connected with the territory of ancient Colchis and Lazika.

Hančar's attempt to trace the origin of the Kobanian bronze axe directly to the stone prototypes of the North Caucasus was entirely unsuccessful. Apart from chronological contradictions, it is impossible thus to explain the ovoid perforation of all Kobanian axes, which were not round as in stone axes and in battle-axes with a cast shaft-hole of the earlier stage.

On the contrary, an original group of axes with round and oval holes stands out among the finds in western Georgia, remotely connected with the axe type from Tepe Gawra through those from Tbilisi and Luristan. This group might be the predecessor of the Kobanian form of axe, appearing to be therefore Colchian not only by location but also by place of origin.

However, in Georgia there exists a still earlier phase of metal production connected with the North Caucasian culture of the large Kobanian tumuli of the first stage of the Bronze Age. A copper battle-axe and spear, with a massive shank bent at the end into a hook, found in 1928 at Zages, comes from ancient Sumerian and Iranian prototypes. In addition, this and another similar spear (without provenance in the Museum of Georgia) resemble closely a somewhat Cyprian form of the Middle Bronze Age. However, the spear from Tbilisi in the Moscow Historical Museum is identical with the copper spears from box tombs at Carchemish attributed to the beginning of the third millennium BC and with their Sumerian prototypes. To this same level of early metal in Georgia we must also assign the characteristic massivé chisel with a facetted spike, typical of this period, from Zekari and now in the Kutaisi Museum. Thus, these isolated finds,

each complementing the other, indicate the existence in Georgia of copper production during the latter part of the third millennium before our era.

I IRON AND LATE BRONZE AGE TOMBS

Systematic work conducted in Trialeti set the same fundamental problem of searching for Early Bronze Age deposits.

Trialeti, occupying the northern part of the vast tableland of the Lesser Caucasus, attracted attention because this was, first, one of the richest ancient centers of obsidian quarrying, thereby playing an important rôle in the trade relations of the Ancient East on the eve of the appearance of metal; and second, a region with cyclopean fortresses of unknown age connected with a large group of tumuli. The excavation of one of these tumuli, although previously plundered, revealed that it could be assigned to the period of early painted pottery.

Alongside these tumuli were Iron and Late Bronze Age tombs. The materials thus collected belong to an almost unbroken period from the appearance of metal to the Sassanian epoch. Thus was reduced to some extent the difficulty of dividing, according to chronological periods, tomb complexes almost devoid of the support of monuments with cultural deposits. This was the reason for examining the tomb inventories in reverse chronological order by studying an uninterrupted chain of monuments covering the entire period from the Late and Early Iron Age to the Late Bronze Age. The objective was to orient the puzzling barrow culture, which does not approach any of the known provincial types of bronze production of the South Caucasus.

The following results were obtained:

1. Sassanian graves yielded an inventory dated by coins of Kavad. Correlated materials were also studied from the excavations by Bayern and Takaishvili at Samthavro (Mtskheta).

2. The Roman epoch proved to be less rich in material culture than the Sassanian period. However, the former yielded some objects, which together with those from previous excavations in Trialeti, appeared similar to those of graves thrust later into ancient barrows and dated by Roman coins and rings with cornelians. Special interest was aroused by a clay amphora covered with a deep light-blue glaze and containing a silver coin, an imitation of the denarius of the Emperor Augustus, and cornelian beads with white painting. The tombs of the later Hellenistic period also proved to be less studied than the others. To them belong open-work bronze plates, found near Rosenberg and in Manglisi, bearing pictures of fantastic animals of a type well known from finds in the central Caucasus.

3. To the next group belongs the Achemenid tomb at Neron Deresi near Santa. This tomb, hidden under the thick walls of a small, late cyclopean fortress, built without mortar of large stones with a rubble of smaller stones, thus seems to be the *terminus post quem* for a series of similar constructions, practised evidently in Trialeti and still later. This curiously enough tallies with the evidence of the Georgian chronicler, Leonti Mroveli, "that the first construction in Georgia of stones and lime" belonged to the fourth century before our era. The grave was a small, almost square box with a very flexed skeleton. The inventory coincided closely with the jug tombs, dated by Colchian coins, near Dablagomi in the Rion valley. Independently, the age of the grave could be determined by the perforated blue glass beads of a necklace which can be dated on the basis of Greco-Persian stone models of the fourth century BC.

4. In 1940 a contemporaneous find was made by a peasant from Tsintskaro on the river Algeti. The contents of the tomb revealed a resemblance to the "Akhalgorian Treasure" and provide the hypothesis that this was the tomb of an Achemenid woman. Her mouth and eyes were covered with gold leaf as during the Bronze Age in Cyprus and at Tell Halaf in Syria. In addition, there were silver rings, electrum bracelets (gold embossed with the picture of the head of a goddess), plates, silver dishes, bronze bridle-bits of Akhalgorian type, etc. The bronze tripod of a lamp, in the form of three human legs, can be compared through the Urartian chandelier with the Etruscan, utilizing the same design.

5 and 6. Undoubtedly older than this is the tomb excavated near Beshtasheni fortress, attributed to the early Achemenid period. Light-colored vessels with a coating of ocher predominated over black ware. The latter, which is characteristic of the underlying stratum, appears to be almost contemporaneous with those tombs containing characteristic massive pins excavated by de Morgan at Lelvar in Armenia. A similar inventory was found in the northern part of the Beshtasheni tomb and in a still older tomb on the other side of the river Keriak-Chai.

7. The greatest group numerically is composed of rough box-like individual tombs belonging to a late phase of the Early Iron Age. These tombs, excavated at Tsintskaro and Gunia-Kala, are somewhat later than the culture defined by Hojaly Tumulus No. 11. The inventory consisted of iron spearheads, knives, daggers with bronze heads, bronze barbed arrowheads, cupola-like bronze knobs, and bronze bridle-bits. In addition, there was the typical assortment of cornelian and blue paste beads of various forms, with shaded ornamentation and white kalcose (?), cylindrical and prismatic, with eyes of "domino" type, representing a characteristic, local peculiarity of this phase.

Almost contemporaneous was the tomb in the district of Maralyn Deresi,

containing objects of Kobanian type of a variant which may be called Colchian, with typical bronze or copper hoes cast in a one-sided form. The characteristic inventory of these graves, in addition to the above-mentioned "domino" beads, includes still larger, pale-yellow, warty, beads of a glass-like mass. In one tomb was found an earthenware goblet with a thick, light-green glaze and a bronze belt with a complicated hunting and mythological scene in two rows, finely engraved.

This group of monuments can be assigned to the epoch of the development of the Lake Van area. Approximately contemporaneous was a stone coffin with bronze socketed forks well-known from many tumuli in southern Transcaucasia; these forks were usually accompanied by large bits with snaffles. Genetically these are probably connected with the possibly earlier Iranian forms of bronze forks without sockets from Tepe Sialk and Tepe Hissar and also found with similar bits of a type well known in Luristan, western Asia Minor, and in Mycenæ. A study of these bits, in contrast to the other later Georgian type, gives chronological support for placing a series of culture complexes in the interval between the eleventh and twelfth centuries before our era.

A somewhat special chronological place must be assigned to the underground tomb at Kushchi in Tsalka, where there was found an iron sword with a special type of bronze handle shaped like a double cone. This type of handle, which occurs at Aligrykh in Armenia and at Shagula-Dere in Talysh, can be compared to Luristan forms.

8. The Beshtasheni grave appears to be the next monument in chronological sequence, with its deeply dug tombs containing no iron objects. The content revealed a similarity to the lower floor of the Samthavro grave, but it is older, since there were no iron objects, no bronze swords, and only cornelian beads. This grave also contained a mixture of Kobanian objects originating in southern Transcaucasian industrial centers. In addition, there appeared a series of features unusual for Transcaucasia: gold and silver ornaments, and copper-bronze sickles, which up to this time, strangely enough, were almost unknown in South Caucasus.

The inventory of these tombs is typical. Thus, in one of the tombs containing a bronze sickle were found: (a) two bronze bits with deer horn snaffles; (b) a conical bronze helmet sewn from bronze leaf, with long ear flaps at the sides; (c) a narrow bronze belt.

Among the pottery—characteristic for an entire series of such graves—was a conical goblet on a hollow leg of the type found by Bayern in Samthavro, but of a larger size and more richly ornamented with a deeply incised, rectilinear, geometric ornamentation having conventionalized figures of deer and goats.

In these tombs, in addition to bronze objects were flint sickle blades[7] often still arranged in their natural arch-shaped form although the handles had long since disappeared.

9. It is more difficult to give an exact chronological place to, and to find a genetic root for, the tombs poor in metal objects. These occur in stone circles with pottery often ornamented with an appliqué relief band. A bronze pin in the form of an axe with the sculptured figure of a sheep, and the general character of the tombs under stone slabs, connects them partly with the preceding group.

II MIDDLE AND LATE STAGES OF THE EARLY BRONZE AGE

The barrow tombs in Trialeti are distinguished by one general peculiarity. Compared with the majority of barrow tombs of central Transcaucasia, Trialetian tumuli, like the local cist graves, were intended not as collective but as individual tombs, although they were used during a later epoch for secondary burials. Another of their peculiarities, even more essential, is the sharp distinction between their contents and that of all graves of the preceding epochs. On the other hand, the tomb inventory of the majority of the tumuli of Azerbaidzhan and Armenia is not separable in time and character from the simple box-tombs adjacent to them.

There is thus created at Trialeti a break somewhat difficult to explain, which makes it next to impossible to determine the chronological position of the Trialeti tumuli.

The main distinction in the pottery types lies in their variety in barrows of different ages. However, in form and technique of manufacture the pottery bears features common to all pottery of the region, for example in the methods of modelling and kilning and especially in the tendency to place a slip on the upper surface. These variations do not occur in either local or contemporary graves in other parts of the South Caucasus.

These factors obliged the author to search for the chronological position of the tumuli outside those periods in which are included the series of graves examined above. Indeed, the craft technique displayed by the contents of the Trialetian tumuli is related closely to the archaism of their agricultural level. Not only is the complete absence of acquaintance with iron characteristic, but even bronze was not in general use. For example, arrowheads were made solely of obsidian and flint. A still more significant factor is the complete absence of

7 During the 1927-1928 excavations at Kish in central Iraq we found hundreds of these flint sickle blades, many of them with the working edge polished from use. They were hafted to pottery sickles with bitumen. In Kurdistan in northern Iraq wheat is still cut with a sickle of the Kish form but now made of metal—H. F.

horse bones among those of other domestic animals, which include *Bos, Capra, Ovis,* and *Sus*. This places a sharp distinction between the horse culture of the graves with their variety of bits, and the tumuli where a four-wheeled chariot[8] was drawn apparently by an ox or bull as in the Royal Tombs at Ur of the Chaldees. However, these data, which assign the Trialetian tumuli to the earlier phases of the Bronze Age, do not provide enough material for a more definite chronological relationship. In addition, barrow tombs may be divided sharply into at least two main chronological divisions, each containing further sub-divisions, with the added problem of correct evaluation of the relative ages of the various types of barrows.

However, it has been possible to establish the oldest Eneolithic level near the Beshtasheni cyclopean fortress, where this level is represented by characteristic highly developed pottery, at once archaic in its mode of manufacture and of its kind and perfect in its execution.

The general tendency was to assign the barrow complexes to an earlier rather than a later phase, which would place them toward the comparatively newly recognized culture of even the oldest Trialetian graves.

During this five-year period forty-two tumuli were discovered. Their excavation was extremely difficult. For example, Tumulus XXXVI, with a height of 5 m, contained a large "sepulchral hall" with an area of 175 sq m and with stone walls up to 4 m in height. Holes, 5.0-3.5 m in diameter, were sunk to a depth of 8 m below the surface. Other holes reached up to 14 m in length and 8.5 m in width and 6 m in depth.

A Barrow Tombs of the Epoch of Large-Scale State Organizations in Asia Minor and Mesopotamia

The tumuli included in this group are differentiated by the presence of gold and silver goblets, parts of personal attire, golden ornamented facings of a tomb standard, golden upholstery of wooden articles, and in particular architectural details. The rarity of arms is one of the characteristic features of the Trialetian tumuli. There were found altogether a few obsidian and one flint arrowhead, one bronze spear of splendid workmanship, and three dagger blades, one of silver and two of bronze.

From the character of the interments, the tumuli of this epoch may be divided into barrows with and without pits, both types with single burials. Cobblestones, which usually formed both types of mound, were either covered with earth or

8 At Kish, where during March, 1928, we excavated the oldest wheeled vehicle yet unearthed, we also found *Equidæ* in the shafts of a four-wheeled and a two-wheeled chariot. See also footnote No. 7—H. F.

exposed as in upper Tsalka and at Lake Tabistskhuri. Burial pits were in the shape of a slightly elongated quadrangle, oriented by its long axis from east to west.

There was often an inclined slope into the dromos, from the eastern side wall. From the decayed wooden remains, especially the many preserved oak beams at Biyuk-Tepe, it is presumed that the burial chambers were covered with a beam sub-flooring. Since the tumulus fell in when the wood rotted, the chamber became filled with stones. Thus, no single vessel was unbroken, the majority having to be restored from 200-250 pieces. No human bones were found. Tooth crowns revealed that the burials were by inhumation, the bones having decayed. However, it is also possible to suppose there was cremation as in the burial of the Hittite kings in the Hattushash.

In Tumulus XXII a skeleton was found in the position of a man placed on his knees and then having toppled over backward. This tumulus also differed in grave furniture in that it contained a minature gold pin, reminiscent of the large double volute, flat-headed bronze pins of the North Caucasus. The corpse or its ashes appears to have been conveyed into the large pit barrow along the dromos and buried in a wooden chariot. In one case, Tumulus XXIX, in the district of Sabit-Akcha (Sapitiakhsho), at a height of 1800 m above sea level, a four-wheeled chariot had been preserved, thanks to a spring having percolated into the tumulus. At the bottom of some of the barrow pits, deep ruts with remains of wooden wheels were observed. Bones of large and small cattle and pigs often filled the pit. Along the walls were rows of large earthenware vessels.

The grave furniture of the pitless barrows corresponded to those with pits. Judging from the above-mentioned sepulchral hall in Tumulus XXXV in Kushchi village and also the pitless barrows, a room was built above ground. The orientation of this unique hall was from east to west. The inventory included obsidian arrowheads, a bronze spear fragment, a silver pin with a richly ornamented golden head, golden figured upholstery, and pottery with a typical skillfully executed design. The entire character of the grave furniture corresponded fully to the pit tombs. The grandeur of the burial chamber, intended for one person, occurred only in one example. Evidently this construction, like the Egyptian mastaba, was erected during life by a person who wished to leave after himself a suitable monument in the form of a tumulus. The hall undoubtedly possessed a wooden covering on pillars. A golden covering with some kind of wooden detail (of a step-fretted column) found on the floor of the hall, revealed its former luxurious decoration.

Pottery was represented in the tombs chiefly by large vessels either in the

form of pithoi with two small handles on the shoulders but also without handles, or by hydriæ without handles and with a short neck passing into a beautifully bent back rim. According to the character of the clays, to the firing, to the finish of the surface, and to the ornamentation, the pottery could be divided into groups. These sometimes occurring together; sometimes characterizing different barrows. Small vessels, mainly thin-walled pitchers with a spherical body and a cylindrical neck, were rare.

An entirely definite ceramic group was formed by a series of red vessels. Hanging from their shoulders were chevrons filled with zigzag lines typical of the water motif on Elamite pottery and with separate figures, including the swastika and geese. There were also vessels with a black polished surface with stamped ornament. Another group included whitish earthenware vessels with a glossy surface and ornamented with dark brown glossy paint in complicated designs consisting of a series of different elements—curved meanders, spirals, wavy lines, chess squares, etc. In this group should also be included black polished pottery with a lighter interior and covered with geometric patterns of dotted cristate lines surrounding signs of the cross, swastikas, and trapezoid figures. To this group also belongs some special large gray ware and occasionally small round pitchers. Finally, a third group was formed of somewhat coarse pottery with deeply incised ornament and black glossy ware with a large concavo-convex wavy pattern.

The peculiarities in the construction of the barrow tombs corresponded to a considerable degree to these pottery groups. Thus, the first group was encountered only in barrows with tombs in pits; the second in both barrows with pits and in barrows with a space beneath the grave mound and the ground level; while the third group evidently accompanied only barrows without pits.

In order to determine the chronology, further local data are required as well as comparisons with similar developments in neighboring territories of the Near East. As for the latter, it must be said that unfortunately the nearest regions to the South Caucasus, those of Lake Van, of Lake Urmia (Rezaiyeh), and of the upper Euphrates, have been too little studied. However, comparisons with the pottery of more distant places, such as Asia Minor, Syria, Mesopotamia, and Iran—differing considerably from one another—give little synchronism with the monuments of the South Caucasus if only the broadest analogies are considered in the sense of the above-mentioned correspondences with the style of Elam II or with the whitish slip of Tell Halaf and Alishar.

Two objects of a pictorial character from Trialetian tumuli indicate chronological position. These are the silver goblet from Tumulus V and the silver

bucket with gold ornament from Tumulus XVII. Both objects are covered with embossed ornament in relief.

The goblet, wrought from a whole piece, is a cylindrical vessel with a round base and a hollow leg, decorated flatly with an engraved lotus rosette and with two embossed friezes. The upper frieze consists of a procession of twenty-three people dressed in smock frocks and with animal-like heads and tails, with large goblets in their hands, standing in front of a similar figure sitting on a chair, with the tree of life behind his back. There is also shown a three-legged altar for sacrifices, with a tall vessel and two animals in front. The lower frieze portrays a procession of nine deer, bucks with heavy horns and does.

A similar procession of deer is also drawn on the lower part of the bucket, while the great vitality and freshness of the treatment of the animals here, compared with the lifelessness of these same details on the goblet, makes us deduce that the bucket is a somewhat earlier artistic product. Unfortunately, only part of one side of the bucket could be restored. This is covered with figures in profile of local hunted animals amid bushes and trees—goats, chamois, roes, two species of deer, and wild boars—similar to scenes on Egyptian palettes, etc. Arrowheads, driven into the breasts of several animals, reveal that this is part of a hunting scene.

If indeed the picture of hunting on the bucket and the procession on the goblet, accompanied by the frieze of deer, belong to one group of religious performances, then it is most natural to see here a cult scene, connected originally with a wood divinity, who was transformed by the regeneration of nature into the divinity of fertility. In that case the tails, with which each person in the procession is provided, have the character of being preserved as a survival of a ritual attribute, as the wolves' tails on the priestly vestments of the Egyptian kings. Thus, there can be little doubt about the original wolf totem which gave rise to this cult scene.

On this basis arose the question, does not the goblet belong to the so-called wolf people of Asia Minor, the Luvians, whose ideographic symbol UR-BAR-RA in Sumerian, is read "wolf," literally "other dog"? This may be all the more certain since the Hittite-Nesite phonetical denomination of the Luvians *lu-u-i-li* is etymologically close to the Latin *lupus*, "wolf," as also is the name of another western Asia Minor nationality the Lykians, from the Greek *lykos*, "wolf."

However, to establish the date of the goblet by referring to these nationalities, localized chiefly in the western and southern parts of Asia Minor, is hardly justifiable because as a purely local ware it appears to be connected closely with the entire rich Trialetian complex. On the other hand, the widespread survivals

of the wolf totem in Asia Minor and in Transcaucasia has spread far beyond the homeland of the Luvians and Lykians.

In this connection there is a special interest in the fact that the base of the ethnic names of the South Georgians: of the Gurians (*gur-* < **gwer*), of the Megrelians (primarily *me-ger*) and of the Imerians (*iber* < **hiber* < *hver* < *gver*) *ger* < **gewr* has retained in Megrelo-Chanian the meaning "wolf." Consequently, according to Marr, in the fabulous Megrelian hero, Geria, we must also see not the simple appellative "wolf-cub" but the eponym of the Megrelian people, inasmuch as the form of this word is that of surnames and tribal names.

The complete uniformity of costume, both on all the standing personages and on the seated figure, undoubtedly bears witness to weak social differentiation in the society which left these monuments. This conclusion is confirmed by the character of the burial ceremony, devoid of any kind of intimations of the existence of slaves following their master to the grave, which was observed at Kish, in the Royal Tombs at Ur, and at the end of the Predynastic period in Egypt.

The antiquity of the younger group of tumuli can be studied by comparing their gold and silver objects with those from the Royal Tombs at Ur and with the finds from Uruk (Warka) in Iraq attributed to the first half of the third millennium BC.

The work on the upper rim of a golden cup from Tumulus IX is closely reminiscent of the similar rim of the small gold cup of King Meskalamdug. The method of attachment of the rings on the handle of a silver bucket (by means of vertical tubes soldered to the brim) resembles the method of suspending silver and gold vessels at Ur.

The technique of the golden sculpture of an animal (pony or mountain goat) from Tumulus V is reminiscent of the method of the gold plating of a wooden form in the figure of the "ram caught in a thicket" from Ur. The construction of the eyes in the Trialetian sculpture, by means of a shell-like foundation, is absolutely Sumerian in character (cf. Ur and Kish figurines). The golden helical lock-rings also find close analogies in Sumerian ornaments. A pendant, in the form of a flat agate in a gold setting and with gold capsules on the ends, belongs to a popular type of ornament in Sumer.

Especially significant is the resemblance between the Trialetian pendant and the agate pendant from the necklace found during 1936 at Uruk, and belonging, judging from the inscription on one of the beads, to the priest Ababashti. In addition to the general and technical resemblance, both pendants bear a striking resemblance to one another in the archaic method of their attachment to the

necklace by means of difficult boring along the thin agate plates instead of using gold capsules as settings. The only difference was that in the Uruk pendant colored stones were replaced by enamel.

Finally, a replica of the Sumerian custom of making the kings' weapons from precious metals is found in the Trialetian silver dagger blade.

Nevertheless, in addition to the resemblances indicated, there is a more noticeable difference, indicating the independence and the comparatively greater youth of the Trialetian culture, in spite of the fact that its connection with the painted pottery, in part near to Elam II style, might indicate a more venerable age. It is absolutely out of the question that the golden goblet from Tumulus XVII with an openwork leg and with gold volutes, ornamented with filigree work and set with stones, could be made in an epoch close to that of the Royal Tombs at Ur with the considerably lower level of technique in filigree work in ancient Sumer.

The same may be said of the spherical beads with figure-of-eight helixes of the type of Sumerian earrings and with stones. There is only a slight analogy for these in the bead from the cupola-shaped tomb in Vafio of the middle of the second millennium BC, when granulation underwent in many countries a considerable development.

There is also a new technical device here—unknown in Sumerian embossing—in the use of a circular correction of the walls of a wrought vessel by a support on the bottom, examples of which occur in the gold and silver cups and silver mug from Tumuli IX, XV, and XVI.

Finally, there is nothing in common with the Sumerian in the stylistic character of the embossed pictures on the silver bucket and on the silver goblet, which are closely connected with one another in general motif and style of treatment of the moving deer.

Unfortunately, there is no real comparable material for these objects. However, in the absence of later Assyrian features, the resemblance to the oldest pictures of Hittite art is evident. The numerous, absolutely similar, paratactically arranged figures find an analogy in the bas-reliefs of Iazili Kai. The garments—short tunics (more correctly kaftans wrapped tightly) with a fringe and shoes with turned up toes—are similar to those of the Hittites. At the same time, individual features occur on the Trialetian objects, as for example the general tenor of the composition, the character of the seat, the wolves' tails as an article of costume, the type of holy tree on the bucket—all of which show the considerable independence of this art and some of the archaic traditions which had nourished it.

The discovery in Tumulus XV of a bronze spear with a socketed head, set in silver, shows very convincingly a later date for the Trialetian monuments than do the Sumerian analogies. The socketed spearhead was a necessary weapon throughout the Near East and Cyprus. However, from Troy (Stratum VI) comes only one example. In Crete only divergent, atypical forms of this period are known. At Mycenæ socketed spearheads seem to be more usual, beginning with the IV pit tomb, from which comes a spear of elegant form, attributed to the seventeenth century BC. On the other hand, these spears are widely distributed in Western Europe approximately at this time (Period II of Montelius). Since in North Caucasus socketed spearheads make their appearance only at the very end of the Bronze Age (e.g. at Crimskaya), then it is obvious that the Trialetian spear cannot be attributed to a period earlier than the IV pit tomb at Mycenæ and Stratum VI at Troy. That is the *terminus post quem* for the entire group of recent Trialetian tumuli.

At the same time there are absolutely no grounds for drawing still nearer to our times the epoch of this newly-discovered culture, a phase sharply distinct from all other late South Caucasian bronzes known. Indeed, the series of local tombs, concluding with the most ancient with copper-bronze and flint sickles, displays complete unconformity with the tumuli, as in the assortment of beads. The beads, as easily transportable goods, present a strong argument against the possibility of synchronizing the tumuli complexes with any of the groups of tombs examined by the author. This is all the more certain since the stylistic peculiarities of the works of art from the Trialetian tumuli are sharply distinct from all that we know in the art of Achemenid Iran, Van, and Assyria.

All that has been said obliges us to consider the complex of wares of the latest Trialetian tumuli as a relatively archaic culture considerably separated from the more or less uniform and mutually connected material of the late Bronze Age of the South Caucasus.

Agriculture and pastoral cattle-breeding, with the rearing of large- and small-horned cattle and pigs (but probably without acquaintance yet with the horse), formed the chief settled occupations and general mode of life. A wooden chariot[9] with four wheels revolving on axles, of Sumerian type, was already in use.

Metal production was in the hands of craftsmen specializing in casting, forging, soldering, in the making of alloys of copper, bronze, silver, and gold, in the fine technique of jewelry (filigree work, granulation), in embossing and stamping, and in making reliefs and rounded sculptures of leaf metal.

9 See Henry Field, *The Field Museum-Oxford University Joint Expedition to Kish* (Art and Archaeology, vol. 31, pp. 243-252, 323-324, 1931).

The pottery trade also obliges us to suppose that skilled artisans also took part in it. For example, they employed various established types of clay, different methods of firing, working, and ornamenting the vessels, including fine polishing, the application of slip, and painting.

There was already known a turning lathe for wood (carving of a column inlaid with gold leaf), a hand potter's wheel, and revolving apparatus for shaping metal vessels. The artisans also used compasses. For the ornamentation of vessels the circle was divided into an uneven number of parts: into five, seven, or nine segments, which was evidently connected with the most ancient cosmology of the Near East.

Arrowheads were made chiefly from obsidian and flint by advanced Neolithic methods. The fine working of cornelian and agate, as is shown by the close connections between the forms of these wares and jewelry technique, took place *in situ* and overcame great technical difficulties, as for example the boring of thin agate plate with longitudinal holes.

Whether these were local glazed faience beads or whether they were imported in undetermined. However, some examples indicate a connection with the deep blue glaze produced by Egyptian craftsmen. Woolen thread was either thick and fluffy or very closely spun. Judging by the picture on the silver goblet, the kaftans were decorated on the border down the front and with a broad fringe along the hem. In addition, the small number of arms is astonishing. Apart from three dagger blades, one bronze spear, and small obsidian arrows, no other weapon was found in the tumuli. Whether this was a sign of the unwarlike character of the population and the peaceful conditions of life in Trialeti at this time is difficult to say without an investigation of the corresponding habitations.

B Barrow Tombs of the Early Bronze Age

In this division of the Trialetian tumuli are included two entirely different groups:

1. Those which may be counted as pertaining to a nomadic people, since they are absolutely devoid of pottery. These tumuli were observed by the author in the southern high part of Trialeti, in a pass (2,000 m) toward Lake Paravan. In one of them lay a rich tomb placed on the ground under the mound. The tomb yielded: (a) a flat copper dagger blade with a wide short tang, perforated for the hilt; (b) flat spearheads of primitive copper work with a slightly differentiated narrow tang and fragments of copper armor in the form of six protuberances, covered with a knobby pattern and with a hole in the middle for strengthening bands; (c) five large obsidian arrows with a groove at the base,

going around the middle of the arrow; (d) three thin golden cylindrical (soldered) covers for a round wooden rod (diameter 2.5 cm)—from their arrangement in an arch near the arrows, this may have been a simple wooden bow; (e) a beautifully worked hematite mace-head with a straight cylindro-conical hole, identical with those of the Syro-Palestine Eneolithic levels and with the mace-head from Alishar II, i.e. of the end of the third millennium BC.

2. Early Bronze Age tumuli, formed of pit barrows with a stone-earth mound, situated in the Khram valley and its tributaries. This type was found intermittently with No. 1. Outwardly No. 1 and No. 2 do not differ markedly but No. 2 tumuli are characterized by the extreme poverty of their inventory. No metal objects were found. The earthenware vessels were usually limited to solitary examples. The poverty of the grave furniture is in strange contrast to the amount of labor spent on building the tomb. In one case (Tumulus X) the pit lay at a depth of 7.5 m below the surface and altogether the bottom was 9 m from the top of the mound. In another case, Tumulus IV attained 5 m in height and 45 m in diameter. Traces of human bones, as was generally the case in Trialetian tumuli and even in younger barrows, were rarely preserved. However, in one tumulus of this type the author succeeded in tracing the laterally flexed skeleton. A pitcher and an earthenware mug were found near the skull. Traces of metal were only twice recorded. In one there was a badly rotted flat copper blade (Tumulus XIX), in the other (Tumulus XXIV) a miniature flat chisel with a four-sided centrum. In addition, in the mound of the large Tumulus IV, with a plundered pit, was found (possibly lost by robbers) a massive silver spiral lock-ring with one and a half turns. This was identical in form and size with the electrum lock-ring from the large North Caucasian barrow at Letnitskaya, associated with a stone and copper inventory of the Early Bronze Age. Only in one case (Tumulus XIX), which was disturbed by a secondary burial in the Urartian epoch, two obsidian almond-shaped arrowheads were discovered.

The chronological position of these tumuli (B) relative to the tumuli of the previous division (A) is founded chiefly on the typological analysis of the pottery, which by its peculiarities is drawn to the ancient Eneolithic level discovered at Trialeti and traced by museum material in strikingly homogeneous forms in a widespread area of the South Caucasus.

The pottery from the B tumuli is sharply differentiated from all the above-mentioned types of barrow vessels of the Middle Bronze Age. Instead of hydriæ and pithoi forming the chief pottery types of barrows with a rich inventory, we find here pitchers and mugs with handles undoubtedly modelled by

hand and without a potter's wheel, but with great skill. In spite of the thickness and weight of the walls of this type of vessel, there is an elaborate finish to the surface, with a smoothing and polishing both inside and out. Two sharply distinct layer of the walls are characteristic—outside black and inside light brown—giving the impression that the thickness had been increased inside. The form of this vessel is original, with a very narrow base and a swollen belt around the body of a distinctly pear-shaped form. Because of its singularly characteristic moulding and the outline of its form, this vessel conforms to one local group of Eneolithic vessels which displays several general features despite the large variety of its forms. The connection is further confirmed by the ornamentation of these Eneolithic vessels. Here can be observed the combination on one vessel of two technically different methods of ornamentation: the concavo-convex (or in any case, of the grooved) design on the protruding part of the body and the finely carved design on the neck. The drawing and the flow of the design in both cases possess a similar character, clearly expressed. We see here a close geometric composition, regular and rhythmical, not as is usual, a repetition around the vessel of some more or less complicated ornamental motif. However, there is a deliberate violation of symmetry because of compositional displacement and reversal of the separate elements. This correspondence alone is enough to clear away doubt of the genetic closeness of both these ceramic products and the connection of the tumuli described with the ancient local paleometallic phase.

This makes the accumulation of pottery and sherds (almost unknown up to the present time) of the ancient stage of bronze development from various regions of Georgia and the South Caucasus extraordinarily important. Thus the range can be fixed and the direction of the cultural succession in this critical period of the history of the Caucasus can be determined. Finally, it should be possible to determine the conditions under which flourished the prosperous cultural horizon of the Middle Bronze Age in Trialeti.

III ENEOLITHIC TOMBS AND THE LOWER CULTURAL STRATUM OF THE CYCLOPEAN FORTRESSES

The monuments in this group touch upon the most puzzling aspect of Trialetian archaeology despite data from tombs and settlements. The possibility of distinguishing this as a special ancient cultural phase was, in contrast to the tumuli described above, based on the correlation between Trialeti and objects from other parts of the South Caucasus.

We are here concerned primarily with single, unusual vessels, possessing significant homogeneous peculiarities both in originality and richness of form,

but amazingly poor in associated objects. The vessels have been found over a wide area. The fragmentary nature of the inventory makes clear to a great extent why this complex has been absolutely inexplicable and even little studied previously. However, its importance lay in explaining the development from the rudimentary stages of agriculture to farming settlements, cattle-rearing, and metallurgy in Georgia and the bordering countries.

In Trialeti pottery from this level was first discovered by E. Pchelina near Kiketi and later studied by the present writer and his staff at Beshtasheni on the site of a ruined cyclopean fortress. A series of sections inside this fortress revealed a four-cornered dwelling with a corridor-like passage along one of the walls, with a stone foundation and with a pisé-built *torne* (a pit oven for bread) inside the building.

The first stratum below these houses included flint sickle-teeth and pottery, typical of a neighboring tomb of the Late Bronze Age. The middle stratum, not found everywhere, contained unique black polished ware with an incised, shaded ornamentation of rectilinear and geometric bands.

Finally, the lowest level was discovered in three places within Beshtasheni fortress and also at two points in the neighborhood. This stratum yielded: (a) three-cornered, flint tanged arrowheads of the Neolithic type from Tetramitsa near Kutaisi (formerly Kutais); (b) a broad flint knife worked on both sides and with the point curved back; (c) oval-shaped grain grinders with long boat-shaped upper stones; (d) an earthenware statue of a bull or ram; (e) pottery with a characteristic stratified formation and with both surfaces elaborately worked although the vessel was moulded by hand. This type was found in two complexes whose stratigraphy is not yet clear.

One of these complexes, studied in a dwelling area having a well-preserved hearth like a fireplace, presents a variant of more massive pottery, approaching types found at Didube and Kiketi near Tbilisi and at Eilar in Armenia. These are without ornament or with a well-expressed ornament in relief (horseshoes and spirals) and in the form of vessels flat-based, broad-throated with tall necks and small solid handles.

The other complex is characterized by the workmanship of the pottery with its narrow caved-in base, hemispheric handle and "concavo-convex" ornament. This pottery is similar to that found both by P. F. Petrov during 1914 at Malaklu in the region of Igdyr below the layer of Ararat lava and in the black ware excavated by Lalaian below the stratum containing polychrome painted pottery at Kul-Tepe in the region of Nakhichevan. This pottery is also similar to the recently published types from Shresh-Blur and Kul-Tepe in the region of

Echmiadzin-Vagarshapat and also at Shengavit near Yereven (formerly Erivan).

Several peculiarities, including disk-like earthenware lids, exist wherever this pottery has been found. For example, unique horseshoe-shaped earthenware stands for the hearth, having a handle, have been obtained from nearly all the localities where this pottery has been found, i.e. from Nakhichevan, Malaklu, ancient Armavir, and Karakurt in the region of Sarykamysh.

Black ware with a bright upper surface often possessed a special red durable slip on the light inner surface of the vessel. In addition, there were mixed in this stratum fragments of vessels on tall pedestals, completely covered with bright red paint polished by rubbing, and ware with traces of red painting and also with black varnish.

Tombs belonging to this cultural stratum, with similar pottery, have been traced in the form of single tombs, where the dead lay in a contorted position in stone boxes.

CONCLUSIONS

With the Eneolithic monuments examined under the last heading we have finally reached, in a certain sense, the limit of the cultural historical perspective in the development of Trialeti. However, at Trialeti it is not possible to discover, as in the majority of the ancient inhabited hills of Asia Minor (Hissarlyk, Alishar, and Sakjegozu) any signs of Neolithic settlements, typically represented in the sites of western Georgia (Tetramitsa, Satapli, and Odishi).

From the pre-metal era in Trialeti there are with certainty only half-cave settlements of the Epipaleolithic period. These latter are unusual in that obsidian was used as the basic material instead of the traditional flint.

We cannot yet trace concretely the progress of South Caucasian obsidian, established by Jacques de Morgan in the Near East in the pre-metal epochs and the early phases of the use of metal. Recent excavations of the Anglo-American Expedition near Lake Van have revealed in the Neolithic layer of Shamiramalti, together with painted pottery of Tell Halaf type, hundreds of knife-like spalls of South Caucasian obsidian and also elaborately finished obsidian weapons in an Eneolithic hearth. These were discovered in the small Van citadel.

Investigations along these lines may prove revealing, since the spread of obsidian might be one of the conditions of the rise of culture in Trialeti and the neighboring volcanic regions just before the appearance of metal. At this time obsidian tools became especially plentiful in the cultural strata of Sumer and Elam. In addition, in the Kura-Araxes basin the above-mentioned culture of ash barrows with artistic pottery of a special style (because of the lower level of technical equipment) is unique. The study of this level, especially its origin,

forms one of the cardinal problems in the prehistory of the South Caucasus. Furthermore, the solution of its ethnogenesis may well lie here, since in this stratum the roots of the cultural prosperity of Georgia in Trialeti during the middle of the second millennium BC seem to be already set.

Indeed, the circumstances indicated above give an entirely new content to the current conception of the historical place occupied by the Caucasus in the development of the ancient eastern world. The history of the Kingdom of Van has entirely different aspects; its appearance was already preceded in Georgia by exceptionally developed forms of living and by highly differentiated handicrafts in the bosom of a tribe-clan society, with a considerable accumulation of wealth.

At the same time it is being convincingly established by new research that there is a near kinship between the prevalent language of the Urartians and the Hurrians[10] (with the same base in denomination, but with the preservation of the initial aspirate). These written monuments have been found by the excavations of the last decade[11] in the strata of the third millennium BC, at least, in western Mesopotamia and Syria where there existed in the preceding epoch that same style of pottery painting (Tell Halaf) as was revealed at Lake Van.

The inclusion of the Van region in this ancient cultural system is significant, since it places concretely the question of its zone of contact here in the north with another eastern Asia Minor system distinguished by an absolutely different ceramic filiation, architectural forms, artistic style, and historical development. In Georgia, however, it has remained extremely difficult to determine the developmental phases of the craftsmanship in jewelry revealed in the Middle Bronze Age of Trialeti. At first glance we receive an impression of some regression during the transition to the Late Bronze Age and later on to the Early Iron Age. Gold and silver ceased to be seen not only in tomb inventories but also in contemporaneous hoards. The Akhalgorian Treasure of the Achemenid epoch appears to have no immediate predecessors.

However, the Kazbek Treasure, with a silver cup and a gold six-radial earring of fine workmanship of local form, denotes the existence in Georgia of pre-Achemenid monuments of this kind. In this connection, great interest is presented by the preserved part of a treasure from Colchis near Nosiri village.

10 See Ignace C. Gelb, *Hurrians and Subarians* (Studies in Ancient Oriental Civilization, Oriental Institute of the University of Chicago, no. 22, Chicago, 1944).

11 For summaries of Soviet discoveries during this period see list of references in footnote 57 in Henry Field, *Anthropology in the Soviet Union, 1945* (American Anthropologist, vol. 48, pp. 375-396, 1946) and *Recent Archaeological Discoveries in the Soviet Union* (American Review on the Soviet Union, vol. 7, no. 4, August, 1946).

This includes golden jewelry and a fragment of an electrum vessel with an embossed head of a lion similar in style to the Hittite bas-reliefs from Zenjerli. The contents of this treasure are characteristic and resemble the Samurzakan Treasure from Chuburiskhindzhi of the Late Bronze Age; here were found gold and silver objects, including a pair of gold lock-rings with flattened ends and lens-shaped disks of various sizes made by cooling the molten metal at the bottom of rounded cavities.

Together with these ingots a few hundred finely polished round cornelian beads were found, some as large as a walnut. Cornelian was also found in the rich tumuli in Trialeti. Beads, similar in material and finish, were well-known from the ossuaries with the Colchian-Kobanian inventory at Esheri in Abkhazia. Cornelian beads were also found recently by the Hermitage and ARMFAN Expedition during the excavations of the Urartian palace at Karmir-Blur near Yerevan. In later complexes such beads are almost never found and do not occur at all during the second half of the first millennium BC.

Almost contemporaneous with this treasure is the old find of 1868 from Partskhanakanevi near Kutaisi, described by Uvarova in the catalogue of the State Museum of Georgia. This find includes a necklace of the same kind of perfectly spherical dark brown cornelian beads (incorrectly taken for garnet by Uvarova) as in the necklace from near Nosiri. This discovery is sufficient to reveal the age of the entire complex. In addition to the necklace, there also belonged to this complex golden lock-rings in the form of spirals repeating the form of the ancient Kobanian bronze types with spiral ends.

Thus, after the discovery of the ancient rich barrow culture in Trialeti, the above-mentioned dating of the treasure from Nosiri and of the complex from Partskhanakenevi not only ceases to appear to be exaggerated, but, on the contrary, there begins to be evident a still closer connection even in the Middle Bronze Age between these collections and the preceding stages of the prosperous art of jewelry-making in Georgia.

Although this epoch does not yet reveal examples of the polychrome style of the barrows, its high level of craftsmanship (granulation and figured embossing) paves the way for the new rise in style in the cultural interactions on the verge of the rise of the Iberian kingdom during the fourth century BC (i.e. the Akhalgorian Treasure and the Algetian tomb). Later the first centuries of our era witnessed the luxurious inventory found near Bori and Armazi, with the decorative splendor of their polychrome of gold, colored stones, and enamel, similar to Panticapea in the Crimea and at Taxila in India.

Museum of Georgia
Tbilisi, Georgia, USSR